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ComputerWeekly

Thursday, February 25, 1982

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Mini maker moves into franchising

by Andrew Thomas

MINICOMPUTERS are being marketed through a network of franchises in a novel move by minicomputer manufacturer Computer Automation.

It is aiming for 150 franchises in Europe and the Middle East, and has already appointed 40. They will initially sell its Omnix small business system, which confusingly has the same name as a now-defunct Unix lookalike.

Franchising differs from distributing in that CA provides complete systems, including software, which are offered to vertical markets, rather than providing components on an OEM basis. CA hopes that franchising will result in large numbers of systems houses installing its hardware.

Holders of franchises will make money on the substantial (up to 45%) discounts offered. In addition, the franchisee receives sales aids, training, and complete administrative documentation.

The Omnix system is based on the Naked Mini 4/04 16-bit processor. A standard system, comprising three terminals, a 120 print position line printer, 64Kbytes of RAM, and two one-Mbyte floppies, sells for under £5,000 in quantities of 25 or more.

Mike Brown, European general manager of CA's OEM division, sees Omnix competing with £20,000 minis in the rapidly growing market for "supermicros" which, it is estimated, will be worth $5 billion by 1986.

"Omnix is aimed at the second-time user," says Brown, "the people who have experienced restrictions with simple 8-bit micros, and are now in a position to make a more objective decision as to what they require from a system.

"The first-time user is primarily concerned with cost, while those seeking to upgrade are more interested in performance."

Full production of Omnix started in January, and there are already 500 orders, with 25 systems in use by franchise holders. The system comes with a new multi-user operating system called Opus-1, which supports both background and interactive processing combined with multi-tasking and multi-user capability.

Also featured is a multi-level priority system, dynamic store allocation, automatic spooling, and dynamic peripheral assignment. System utilities include disc initialisation and copying, a source editor and compiler, and printing facilities.

Brown says that Unix will be available later, but that any enhancements will maintain the upgrade path through the Naked Mini range.

Maintaining CA's presence in the OEM market is Workstation 1, the first of a new series of desk-top 16-bit micros. OEMs and distributors can buy a complete system, or opt for any of the component parts, allowing, for example, the use of other manufacturers' disc drives.

Both Omnix and Workstation 1 are currently manufactured in Dallas, but the plan is to transfer production to CA's plant in Dublin as soon as possible.

BROWN . . . Competing with £20,000 minis in supermicro market.

Chance to answer back

by Donald Kennett

A TELESOFTWARE and publishing service for microcomputers which allows users to channel their comments back to software authors is to be launched by Commodore.

Called Petnet, the "bulletin-board" service is based on ADP Network Services' nationwide bureau network.

Petnet designer Nick Green, Commodore's special projects manager, said Petnet would provide the sort of software publishing utilities that should exist for microcomputer users.

Petnet takes conventional development tools for granted, Green said, and concentrates on providing feedback to software authors from the people who buy their products.

The network enables authors to make their programs available at a cost up to £999.99. Purchasers can open a comment window while running software to record a satisfaction rating and a comment.

The comment can be the cure for a bug in the program, which the purchaser can in turn charge for. Commodore will then fund the service by raking off 10% to 15% of the money that passes through the system.

The basic cost of using the service is likely to be between 20 and 30p a month per 1,000 characters stored.

Rival giants invest in each other

by Kevin Cahill

DESPITE increasing unease in America about the share of the world's high technology markets which Japanese companies are winning, investment by Japanese and American companies in each other's countries is booming.

A survey carried out by the Japan External Trade Organisation, Jetro, shows that Japanese companies had invested over $8.8 billion in manufacturing facilities in the United States up to the end of 1981. Most of the investment, especially recently, has been in the field of computers and semiconductor technology.

According to Jetro, the share of Japanese overseas manufacturing carried out in the US rose from 25.8% in 1976, to 43.5% at the end of 1980.

There are over 300 Japanese companies manufacturing in the US, with average employed capital of $8.6 million and an average 200 employees each.

Three of the most recent entrants are Fujitsu, NEC and Hitachi, which have all begun semiconductor manufacturing in the US. NEC will be concentrating on 64K dynamic RAM production.

The Japanese computer industry itself was dominated by American companies until the year before last, when Fujitsu finally wrested the top slot from IBM. But whereas very few American computer companies ever set up actual manufacturing facilities for the computers themselves in Japan, many of them have established semiconductor plants.

Texas Instruments has increased its Japanese production capacity for 64K RAMs to over one million per month, which is still well ahead of any Japanese company's plans so far announced. The company has also begun mass production of 8-bit and 16-bit microprocessors in Japan.

Last year Intel set up a new head office in Tokyo which cost it well over $14 million, and now has an estimated 70 design staff there.

The company, which began marketing 16-bit microprocessors from its Japan plants last year, also announced that it was considering a new semiconductor facility in Japan. Gordon Moore, Intel's chairman, said that his company could "hoist the go-sign" for the new plant as early as 1983.

MOORE . . . Go-sign for new plant as early as 1983.

When looks mean a lot

by Rory Johnston

YOU might think it odd to build a package with painstaking care when you don't know how to build what goes inside. But the London design firm of Hulme Chadwick has won £1,000 by doing just that.

It came first in a competition organised by Philips and the Society of Industrial Artists and Designers to visualise the office of 2000 AD. Its entry was a portable terminal, elegantly packaged with flat screen and keyboard but with one drawback – it does not actually work.

The other prize-winning entries consisted of drawings of various futuristic room layouts for offices (with not a scrap of paper in sight) together with descriptions of hoped-for principles for the future, such as "a reversal of the Industrial Revolution" and "diversity is reality". Another proposal was for offices in trains and planes.

Second prize was won by John Tatlock of the Greater London Council, and third prize went to interior designer Rodney Cooper.

The idea of a portable terminal is unsurprising, and Sony has already released one. The judges nonetheless described it as "by far the most imaginative submission". It was based on the concept that work can be done at home, in trains or on the factory floor.

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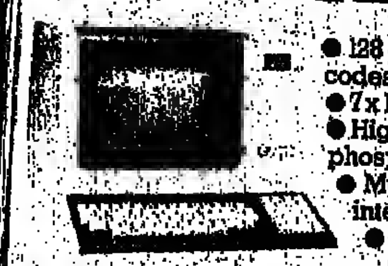
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NEWS BRIEF

HP challenge to IBM with £3,000 micro

HEWLETT-PACKARD has launched a microcomputer to compete against IBM's Personal Computer and Apple III. The HP87 is aimed at the analytical, technical market rather than the commercial user, and will sell for just over £3,000 in the UK complete with disc and printer.

It is not based on a 16-bit, unlike IBM's machine, and does not offer CP/M as a standard option, though a plug-in module is available which should allow the HP87 to run a wide range of applications programs as well as the systems developed for the HP85.

The HP87 micro.

Three for PAYE

COMPETITION to supply the 18,000 terminals for the PAYE computerisation project is now down to three companies following the withdrawal of Olivetti. The companies in the race for business worth up to £25 million are ICL, Ferranti and Plessey.

Printer boost

MIDDLESEX-based Data Recording Equipment, the National Enterprise Board-owned print and magnetic media manufacturer, has beaten Japanese and American competition to supply 750 printers to microcomputer supplier AI Microcomputers. AI is Japanese but the printers will go to buyers of its machines in the UK.

£3m education

MORE than £3 million a year is being spent on the Microelectronics in Education programme that was announced early last year, according to a statement in the Commons by Dr Rhodes Boyson, Under Secretary of State for Education.

Acorn user group

AN independent user group for the long-awaited Acorn/BBC microcomputer has been formed in St Albans. Beebug will provide the usual user group activities – advice, discounts, competitions – and a magazine.

IT centres soon

MOST of the 30 information technology centres will be opening in the next two or three months, Information Technology Minister Kenneth Baker reported to Parliament.

PERCIVAL: "Support goes on."

Magnuson fires UK sales staff

by Boris Sedacca

TROUBLED Magnuson has effectively dropped out of the European market for IBM plug-compatible mainframes by making its whole UK sales force redundant. A potential customer in West Germany, Storbest in Lubeck, has had its machine removed during evaluation trials.

Magnuson has been hit by the news that fourth quarter of 1981 losses, previously forecast at $10 million, have doubled to near $20 million, and its whole future is in doubt following the breakdown of merger talks with Storage Technology.

The knock-on effect has now been felt in the UK and Peter Percival, who is head of European operations and has just re-assumed his former position of UK managing director, has made redundant his entire salesforce of 20 people out of a staff of 30.

The local Magnuson operation is independent of the US corporation and acts as the exclusive UK distributor. Percival's plans to expand into Europe were short-lived and Mike Tucker, recruited to replace him in the UK, spent only six weeks in his position.

Govt rejects 'Buy British micros' plea

by Robert Parry

THE revised list of approved suppliers of microcomputers to the government will not deliberately favour British companies. EEC regulations on competition are being cited as the reason.

The Central Computers and Telecommunications Agency (CCTA) is to award continuing contracts to supply microcomputers in three categories. The number of companies favoured may be increased from the present nine to a maximum of 12, which gives hope for more UK suppliers, but the CCTA is sticking strictly to the letter of EEC regulations preventing preferential treatment.

Only three weeks ago Information Technology Minister Kenneth Baker rejected calls from the National Economic Development Council for more direct government support, but called on managers to "take investment and procurement decisions with the long-term objectives of UK industry in mind".

He is also committed to what he dubs "enlightened public procurement".

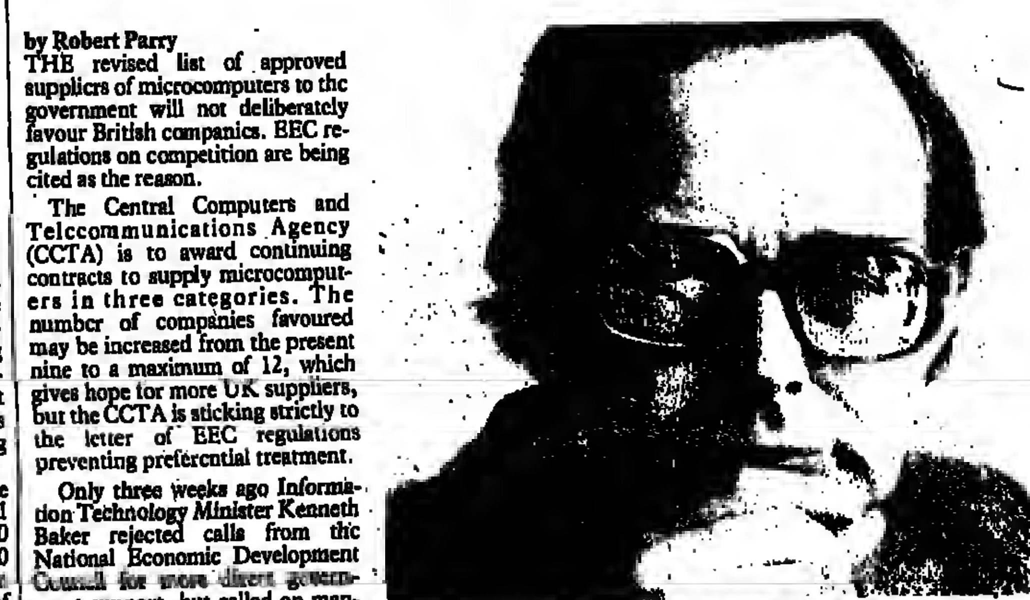
Commenting on the buy British calls, Gerald Watson, director of the CCTA, said: "We are not against it, certainly. But there is no way, at the end of the day, you can choose nine British companies."

If all things were equal, though, buying British would sway things, Watson added. Also in British companies' favour is that they ought to be more responsive than people importing in providing support over the wide geographical area to be covered, he said.

The CCTA list was drawn up a year ago and contained three companies in each of three categories, covering machines up to £2,500, up to £6,000 and over £6,000. This time round the categories have been changed, "rationalised with hindsight" according to Steve Owsianka, who heads the CCTA's microcomputer operation.

The nine companies originally chosen were Research Machines, Microsense (now Apple Computers) and Commodore; Casu, Modata and Thame; Equinox, Wilkes Computing and BMG Microsystems. BMG went out of business at the end of last year and applications are being transferred to other systems on the list.

The two top groups are combined, and there is now a "scientific" group.



WATSON . . . "No way to choose nine British firms."

Fisons DP jobs under threat

by Kevin Cahill

RESTRUCTURING of computer use at Fisons, one of the biggest agriculture suppliers in the country, could make many of the company's current DP staff redundant. Already 15 look likely to go.

First of the Fisons divisions to be affected is Crawley-based MSE Scientific Instruments, where 15 of the DP staff are expected to be offered redundancy following the replacement of the current Burroughs 1855 with an ABS Computers MX minicomputer system.

"Our move will enable us to do away with those expensive trimmings associated with running a large mainframe – that is, skilled operators, systems support staff and a constantly controlled environment," said a spokesman.

The move to the minicomputer at MSE is expected to be followed shortly by a second order for an ABS machine at one of the other Fisons instrument division sites.

Fisons has a variety of equipment scattered throughout the group which currently employs 10,000 people.

Last year, the company moved its head office to Ipswich and installed a series of networked microcomputers and bureau-based terminals. This was to avoid the cost of setting up a DP centre, and a spokesman said the company was moving away from the concept of conventional mainframes.

Overall, Fisons is thought to have about 200 DP staff, who could be affected by the move to user-operated microcomputers, which run only ready-made packaged software.

The ABS machine is worth about £75,000. Burroughs was not asked to tender for the B1855 replacement.

Fisons has signed agreements in principle to sell its entire fertiliser division with its 2,800 staff, to Norwegian Norsk Hydro.

Compec goes North of Border

SCOTLAND is to get one of the Compec series of computer exhibitions, it was announced today. First reservations have been received from companies including Racal-Milgo, Tektronix and Computers And Systems Engineering (Case).

The Compec exhibitions, run by Computer Weekly, centre on the main show in London each November which is Britain's largest exhibition of computers, systems, peripherals and software.

Last year Compec North was introduced in Manchester. Surveys of visitors to the London event had shown that visitors were attracted overwhelmingly from the southern part of the country.

The innovation proved successful, and this year's Compec North in June is filling a much larger hall as a result. Now Scotland, even more in need of its own computer exhibitions, is to see a Compec serving that country.

The show will be held at Glasgow City Hall, in the centre of the city and at the heart of the main industrial region, and will run for three days, September 7-9, 1982.

Pre-announcement reservations reflect the need to set up the Scottish show. Case claims £2 million of orders taken through its Scottish office since the beginning of the year, and sees Compec Scotland as a natural. Racal-Milgo has reserved between four and six stands, and Lancashire-based MAP Computer Systems says it will also be there.

The Compec shows are organised for Computer Weekly and its sister journals by IPC Exhibitions. For more details clip the coupon on page 22.

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Move to cut out agencies

by Philip Hunter

AN attack on the business of contract recruitment agencies is under way from a new directory, which aims to cut them uut of the chain between prospective employer and contractor. But one of the first sdvertisements to attract entries from contract staff for the directory has provoked an angry response from some agencies.

They are upsei that the wording of tbe advertisement suggests that contractors working for their own limited company will have tax deducted at source by the agency after 1982, as a result uf government legislotion.

The row stems from an advertisement appearing in Computer Weekly on February 18, 1982, which claimed that it was almost certain that contracting companies wbo find work through agencies would have 30% of their income deducted from April 5, 1982.

However, the Treasury has already said that it definitely will not be introducing such legialation to take effect from April 1982.

The directory in question, called the National Computer Contract Directory and published by London-based DP Recruitment Ltd (DPRL), will be published in April this year.

The controversial advertisement contained an application form for potential contractors to submit CVs free of charge for inclusion in the first edition of the directory, to be published annually with quarterly supplementary updates.

It claimed to offer clients the opportunity of approaching contractors directly and therefore save the agency fee.

"It was not our intention to give the impression that contracting companies would definitely have tax deducted at source after April," says DPRL director Thomas Kay.

BARBER . . . AS 9000 producing "widely differing work outputs."

More dissatisfaction with NAS systems

by Boris Sedacca

A USER of plug-compatible mainframes in the IBM 3081 class has sdded to the growing body of evidence that the machines are not realising their full power potential.

This follows lsst week's revelations that five prominent German industrial groupa have joined up to complaio of shortfalls in the performance of IBM 3081s.

OCL, the largest UK container shipping group, has found that it is not getting full processor utilisation from its AS 9000, the IBM 3081 plug-compatible equivalent from National Advanced Systems.

But the company has emphasised that its performance shortfalls are due to the number and type of jobs it is running rather than any inherent problema in the machine's architecture.

"We carried out benchmarks with a limited amount of storage on the AS 9000 at Guardian Royal Exchange before we bought our own machine, and the figures we got suggested that the AS 9000 was five times more powerful than our IBM 370/158 multiprocessor configuration operating at 1.7 million instructions per second," explained Anton Ratnaynke, OCL data centre manager.

But this figure is based on selected applications and OCL found that when it brought in the rest of its workload, it could not achieve the full power of the AS 9000.

Brian Barber, head of management services and Ratnayake's boss, added that he never expected that everything would run at 11 mips, the rated power of the machine.

"We get widely differing work outputs. Substantially everything runs at eight to 11 mips. We had only just got used to our 158 which was fine-tuned like a fiddle and gave us 98% processor utilisation.

"We have not got to this stage on the AS 9000 and we are relatively new boys in tuning it. We have yet to optimise our channels, memory and so on," he said.

● Kevan Pearson adds: OCL's experiences do not fit the pattern of performance problems with IBM 3081 computers. Their main problem has been insufficient input/output, for the speed of the processor.

This was evident with the previous top of the range IBM compatible systems, including IBM's own 3033, and has been exacerbated by the new generation of high performance computers like IBM's 3081 and NAS's AS 9000.

Japanese arm for first IBM industrial robot

by Boris Sedacca

IBM'S first move into industrial robotics will be based on a low-cost Japanese mechanical arm, which will be controlled by its personal computer.

The arm is built by a Tokyo-based company called Sankyo Seiki Manufacturing and will sell for $28,500 with an IBM badge describing it as the 7535. IBM hopes to begin shipments of the device towards the end of the year.

According to Laura Conigliaro, robotics expert with Wall Street analyst Bache, the 7535 is Sankyo Seiki's Selective Compliance Assembly Robot Arm, Scarar.

Conigliaro said the Scarar category of robot moves mostly in a horizontal plane and is best suited for assembly jobs.

"Dexterity is of secondary importance in the case of this device, but it is suited to fast production work. Machines with more degrees of freedom have superior dexterity but are not designed for high-speed work," she added.

The IBM 7535 has four "degrees of freedom" or axes of movement, but a more advanced robot, the RS1, will have six. Conigliaro predicts that the RS1 will be a "rectangular robot", that is, it will operate in a rectangular plane. It will have a five-pound payload and will use a hydraulic drive. Scarar is simple and sells for less, she said.

Conigliaro believes also that IBM is interested in making its language, A Manufacturing Language, the standard industry language for robotics.

HP launch a challenge to DEC

by David Craver

MORE lines have been drawn in Hewlett-Packard's strategy to dominate the supply of systems to the manufacturing community. Two new real time computers designed primarily for OEMs have been released at the bottom-end of its technical family of systems, which puts HP in head-on competition with Digital Equipment.

"The thrust is at the technical environment," says field marketing manager Tony Hart, who describes DEC as the "establishment". The new products will mainly be used by hardware OEMs to integrate into machinery such as numerical control, and to a lesser extent by software OEMs, Hart adds.

Both releases are in the HP1000 series: the A600 is a full-function microcomputer with a cost of less than £1,560 in OEM quantities of 100; and the A700 is a mini which HP says can perform up to 450,000 floating point operations per second and will cost under £6,400 in quantities of 100.

The systems use new main processors. That contrasts with the top-end HP1000 Value 65 announced last month, which was an enhancement to an existing range. The A-series central processor is implemented by four Schottky bipolar bit-slice microprocessors, and both have a new real time operating system, RTE-A.1.

At the bottom of the 1000 family is the L series, released some 18 months ago, and which competes against the PDP-11/23. The A600 and A700 are positioned against the PDP-11/34 and 11/44 respectively, Hart says.

Hart points out that the Value 65 is not an OEM machine, and that it is not made obsolete by the introduction of new processors lower down the range. But with HP's announcement that it has a 32-bit processor lo prototype stage, there are bound to be further developments at the top end soon.

HP claimed the Value 65 was the first 16-bit machine to have virtual memory for data capability, and it claims the A600 is in turn the first microcomputer with such power.

HART . . . Hewlett-Packard taking DEC head-on.

NatSemi loss on quarter

by Kevan Pearson

NATIONAL Semiconductor, the US microprocessor maker which last month was dropped from the approved list of US government suppliers, says it expects to make a loss on results for its third quarter which ends on March 7. In the comparable quarter last year the company had a net profit of $9.6 billion. The company attributes its poor performance to the competitive market in microprocessors and what it describes as the "temporary suspension" of supplies to the US government.

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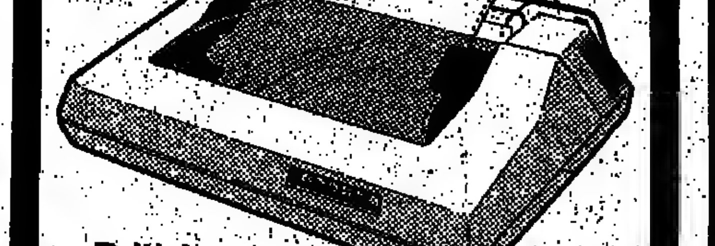

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High Street viewdata is Debenhams' aim

by Donald Kennett

VIEWDATA in every major High Street retail sbop is the aim of Debenhams Interactive Systems Company (Disc), the newly-launched subsidiary of the Debenhams chain. Debenhams owns 170 shops, including Hamleys toys and Lotus shoes.

The company has teamed up with CMC and Computex to develop Viewbase, which integrates Computex's private viewdata system with CMC's Procs interactive database system.

CMC Leasings' managing director Jerry Causley claims it is the first viewdata system to be integrated with an interactive database.

Expensive tailoring is needed to link other viewdata systems' gateways to databases, he says.

Disc's managing director David O'Malley believes the system will make a reality of Viewdata's early promise of limitless applications.

"If you cannot input data, collect it, update files immediately, search for the data you want, analyse it and present it to the user in any way be wants — it is not surprising the viewdata market is characterised by people scratching their heads over what they want," he says.

Viewbase does support these functions, he says. It is also possible to write programs on the system using a viewdata terminal with an alphanumeric keyboard, or to enter complex database inquiries using CMC's inquiry language misleadingly called English.

Debenhams has spent 18 months researching in-house applications while the system was under development. "This is not a supplier's system, but comes from users in the real world," says O'Malley.

One of the early uses has been to provide all directors and managers with summaries of each week's activities which they access on Sunday evenings from their home terminals. Another is to provide performance information such as changes in sales-per-square-foot to traders running stalls within Debenhams shops.

Joint development of the system will continue under an agreement with Computex. Enhancements planned include using microcomputers in shops to pre-process or manipulate data before it is sent into, or after it is collected from, a central system.

And a strong possibility for the medium-term future is that Disc will use Debenham's 70-node leased line network to provide viewdata-based communications services.

In the shorter term, Disc's product range will include software for processing non-payment problems called Debtor and Litigator, which it uses in-house with up to 800,000 customers at a time.

The Viewbase software costs £18,500 and it runs on hardware costing from £50,000 to £500,000 depending on the capacity and complexity of the system.

For example, Disc has a Digital Equipment PDP-11/70, capable of handling up to 50 simultaneous accesses, providing a front-end to three CMC Reality database machines running different applications. This set-up costs £200,000. Space on this system is offered to small users or for trials.

The features that are extra to Prestel-type viewdata give the system access to the biggest untapped market in the country, in O'Malley's view. It consists of 350,000 outlets from 235,000 businesses, 20,000 of them large, he says. It will be worth £80,000 by 1985 and £500,000 by 1990.

"The retailer with 150 outlets has never had any trouble justifying a mini," be adds, "But he couldn't afford the terminals until viewdata. That makes it dramatically different."

The first customer for the system is shoe manufacturer Clarks, which also owns Peter Lord shops and recently took over K-Shoes. K-Shoes has 325 shops and recently started using a bureau-based voice response system for collecting re-ordering information.

Discussions are in progress with potential customers in the fashion, travel, betting shop and brewery sectors. Apart from retailers, finance companies and potential viewdata service operators are target markets.

O'MALLEY . . . "Our system comes from users in the real world."

Teletext Month in October

by our Parliamentary Correspondent

ANOTHER National Teletext Month will be held in October, John Wakeham, Under-Secretary of State for Industry, told the Commons.

He promised that the Department of Industry, in co-operation with all sectors of industry, would continue to promote teletext and viewdata in 1982 as in 1981.

The UK had a world lead, he said. About 90% of teletext sets sold or rented in the UK had been produced here, and sales were going extremely well.

In the second half of 1981, the number of teletext sets doubled over the total for the previous five years, and he expected the total to double again this year.

● A survey conducted last year has shown that 30% of manufacturing companies in Britain are using or intending to use microelectronics in products and processes. This compares with 5% shown by a survey in 1977, Kenneth Baker, Minister for Information Technology, told the Commons. "This is a considerable improvement but much remains to be done," said the Minister.

IoD brings financial modelling to members

by Kevin Cahill

A FINANCIAL modelling package from ICL may reach up to 30,000 company directors following installation of a single terminal at the Institute of Directors.

The terminal, connected to ICL's Reading computer centre, is used to run one of the modules of a financial planning package which was jointly developed by ICL and consultant Geoffrey Smith. Smith runs a one-man consultancy company near Cheltenham, Glos.

The module being run at the Institute of Directors Business Centre is Strategic Vision, which enables a user to examine and balance factors such as productivity and profitability and look at alternative financial strategies.

The institute is initially planning to use the package in conjunction with a series of in-house courses being run in April and September, but its members will have access to the package on other occasions.

The installation of the module at the institute is a considerable personal triumph for Smith, who has been plugging both the idea and the product since 1977.

The breakthrough came in 1980 when ICL offered to develop the package in conjunction with the financial modelling language Prosper. It took about fourteen months to complete the software, which includes budgeting and tactical financial planning modules.

Smith reckons that less than 6% of companies in the UK do financial modelling on any scale.

So far 20 customers have bought the package which currently runs on 2903, ME29 and 2900 series hardware.

Later versions will run on the Rair Black Box which ICL is now marketing.

Industry Minister Ken Baker (left) and designer Geoffrey Smith (centre) at the launch of the ICL Strategic Vision service at the Institute of Directors.

HP beaten to the post

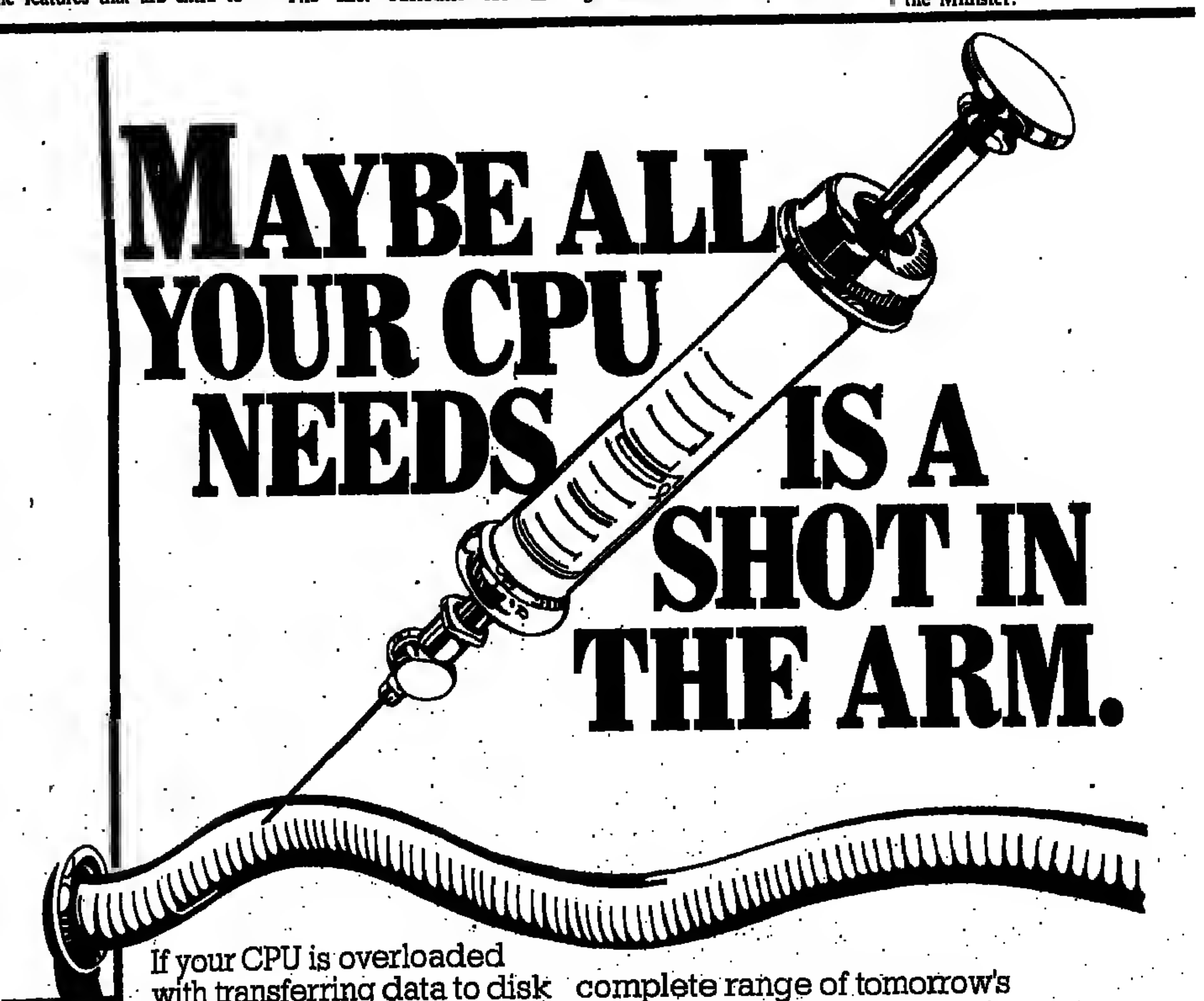
by Kevan Pearson

INFOMEDIA, a small California-based service house, has beaten Hewlett-Packard to the market with an electronic mail system for Hewlett-Packard's own HP3000 minicomputer.

The system, called Jenny, costs $9,800 in the US, and will run on any HP3000 with 128 Kbytes of memory operating under Master Program Executive, HP's commercial operating system for the 3000. The system is menu driven with nine special function keys, and should require no additional hardware investment for most users, says Infomedia.

The company plans to sell the system in the UK, but is still negotiating a distributorship and no details are available, said a spokesman.

Hewlett-Packard confirmed that it is developing its own electronic mail system, which should be available later this year. Infomedia has considerable experience in the electronic transmission of data. For a number of years it has been offering a teleconferencing system based on Digital's DECsystem 10.



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British Telecom wins first major digital transmission customer

by Dnnald Kennett

BRITISH TELECOM has come out fighting in the newly competitive business telecommunications market with the securing of its first large order for X-Stream digital transmission services. A £300,000 a year contract has been signed by the Central Electricity and Generating Board which will link private exchanges between its London headquarters and divisional offices on a 1,000-mile network.

X-Stream, announced in January, can be used for sending large volumes of computer data, for video-teleconferencing, and for interconnecting PABXs.

In the meantime the Mercury telecommunications network, which received its licence from the government last week, hopes to announce its first customer "shortly". It plans to open its first routes early next year in London, followed a little later by its first trunk route, to Birmingham.

The terms of the licence granted to the Mercury consortium (Cable & Wireless, Barclays Merchant Bank and British Petroleum) allow for interconnection with BT's network for both inland and international circuits.

Mercury will have its own satellite ground station for links to other countries via Intelsat, but the satellite channels themselves will be negotiated on Mercury's behalf by BT International. It may negotiate with overseas telecommunications carriers, but BTI will have the right to be present.

The terms for the connections are to be negotiated between Mercury and BT over the next three months. If they fail to agree, the Department of Industry has the power to direct BT on terms.

BT chairman Sir George Jefferson said: "There certainly will not be carte blanche on interconnection. The degree of interconnection will depend on the extent to which we can reach mutually acceptable financial and technical arrangements. . . . We have to ensure that the economics of our system are not unreasonably affected to the detriment of our customers."

Industry Secretary Patrick Jenkin said: "This will be the first time there has been full competition in telecommunications. We are going further and faster than any other country including the Americans. Competing firms will offer a variety of services to their customers."

C&W Communications Services managing director John Bird said: "Digital service will enable you to transmit that which is not possible at the moment in terms of images and information. Digital communication is going to introduce a major explosion in terms of the terminal equipment. Instead of having to talk at the speed you and I talk at, you will be able to talk at the speed machines talk to each other at, computers to computers."

Mercury's chief executive designate is Derek Evans, currently C&W's head of telephones. The financial director is expected to come from Barclays Merchant Bank.

● British Telecom International last week accepted an £8 million 11,000-line computer-controlled international telex exchange from Plessey Controls. A smaller version of the same type was installed in 1978. The new one, probably the world's largest, could eventually be expanded to 27,000 lines.

JEFFERSON . . . "No carte blanche on interconnection."

The exchange stores each message until it has been given all the destinations it is to go to and then transmits to each in turn. If a connection is unsuccessful at the first attempt, the exchange re-tries repeatedly without referring back to the sender.

CGS ready to market Multitel videotex

by Jack Gee

AFTER five years of research involving some £2 million, France's CAP-Gemini-Sogeti is ready to market its Multitel videotex system.

Jean Claude Guillet, director for new technologies at CAP-Gemini-Sogeti, said the company hoped to sell several hundred units of the videotex system by 1985 at prices ranging from 500,000 to two million francs (£59,000 to £200,000).

CGS has invested 10 million francs of its own funds in the project, with an equal sum from the French Telecommunications Authority.

The product comprises four systems: Multitel 10 (an autonomous control system), Multitel 20 (which provides access to a videotex and computer system), Multitel 30 (control system) and Multitel 40, which is an extension of Multitel 30.

Guillet said the purpose was to offer clients possibility of access to a videotex system which would not impair the structure of their existing computer equipment, leaving them free to associate other equipment without risk of incompatibility.

Multitel operates on CII-Honeywell Bull's *Mini-6*, Intertechnique's *Realité 2000* and IBM.

But CGS foresees competition from rival French manufacturer Steria, which has already sold 75 units of its Videopac videotex package system in Italy, Brazil, the US, Greece, and France over the past year.

Steria's launching effort was aided by the entry into service of the French Telecom videotex pilot ventures at Velizy in the Paris suburbs. The company's control equipment is being used for a test covering 2,500 homes.

Steria plans to sell several hundred videotex control systems a year with 70% bound for the export market.

CHRISTOU . . . MAI's dealers will be fully supported.

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WESTWARD
A step in the right direction

Dealer network set up for business range

by Philip Hunter

A BIG sales drive has been launched in the UK to coincide with the release here of a new 8-bit personal computer by US manufacturer Management Assistance Inc, MAI.

A dealer network is being set up to promote MAI's range of Basic Four business systems, which have already been successful in the US.

The new micro has been added to MAI's product line following its takeover of US dealer and systems house RCO, which developed the machine. It will fit in at the bottom of the Basic Four range, but will also be offered either as a personal computer running CP/M software, or as an intelligent terminal connected to a larger Basic Four computer.

It will cost £5,000, half the price of the MAI 80, which will be the next up in the range.

MAI has also announced a new member in the middle of its Basic Four range, the 310, which costs from £32,000.

It comes with standard word processing features and a new fixed disc drive with a total capacity of 120 Mbytes and magnetic tape back-up. It will run up to 16 virtual display terminals and memory up to 256 Kbytes with disc capacity up to 120 Mbytes.

It fills a gap in the Basic Four range, which at present starts with the MAI 80 for under £10,000, continues with the 210, then the 510, the 610 and finally the 730 which sells for about £80,000.

All members of the range run Business Basic and share a common operating system with upward compatibility.

MAI's UK dealer network has been set up on a basis of vertical market type, and will sell all MAI hardware, with a range of new applications software packages.

"The dealer will in future receive the same support as one of our own branch operations," claims MAI's UK dealer, Peter Christou.

One of MAI's new software products is MIBS, an integrated business system, which runs on the current bottom range MAI 80, and costs £1,000.

It consists of a suite of independent modules for the usual ledger, order processing and payroll applications.

ICL wins micro deal from IBM

by Donald Kennatt

KENNING Motor Group, for 10 years an IBM user, has ordered £300,000 worth of ICL DRS-20 microcomputers. They will be used by receptionists in its 60 main car and van hire depots from Aberdeen to Dover, to handle reservations and prepare documentation such as rental agreements.

Each keyboard will have a credit card reader attached and each night the IBM mainframe at Kenning's head office in Chesterfield will call up all the DRS-20s over the public telephone network, first to collect data on the day's transactions and later on to update local files on vehicle movements and availability.

Kenning's aim is to increase the utilisation of its hire fleets, as well as to improve the level of service to customers.

ICL won the order in competition with NCR, Datapoint, and IBM. It launched the first three models of its DRS-20 range last October to replace the ICL 1500, to provide local networking capabilities at 1.5-Mbps and to provide connections to IBM mainframes under several terminal emulations.

30-checkout PoS system

by Doonald Kennett

THE UK's largest supermarket bar-code scanning operation, with 30 checkout lanes, is to go live in August at Portsea Island Co-op in Hampshire.

It will be based on NCR 1255 point of sale terminals installed in 1980 for use with just the keyboards connected to the T-8250 central processor.

Using the slot scanners through which the bar-coded goods pass will enable the Havant Hypermarket, the branch of the Co-op in which the system will operate, to provide customers with fully itemised receipts, listing brand, size and price.

The hypermarket expects to gain increased sales information, increased throughput per checkout and to save on the cost of price-marking 40 million individual items a year.

SALES BRIEF

GEC systems to speed the Tubes

LONDON Transport has ordered over £300,000 worth of GEC 4000 Series minis for passenger information systems on the Victoria and Northern Lines and the signalling system on the Jubilee Line. The order includes three 4090s and two 4065s and is to be completed by the autumn.

The passenger information system will drive new displays which show the expected time of arrival as well as the destination of the trains.

Drives for ICL

ICL has placed an order worth several million pounds with CPU Peripherals of Shepperton for 14-inch Winchester and 8in floppy disc drives. The drives are made by Shugart in the US and ICL will build them into the Perq scientific graphics computer which it is due to start making at its Letchworth factory.

£3m terminals

IBM has ordered £3 million worth of hand-held portable terminals from Reading-based MSI Data International for use by its customer service division. MSI has made 200,000 of the terminals over the last two years and IBM's are to be delivered over the next 12 months. They are designed for capturing data at source and then transmitting it over telephone lines to a computer.

AA network

THE Automobile Association has installed a £30,000 UK-designed data network supervisory system from Banbury-based Tech-Nel Data Products. The system, based on the recently-launched DS/46 remote switching and monitoring alarm module, is at the AA's head office in Basingstoke.

Navy spares

MINISTRY of Defence has ordered a CTL 8026 mini from Computer Technology for the Royal Navy to run a spares control system at Portsmouth Naval Base. The system will be supplied with three 80-Mbyte disc drives and a number of software packages, one of which presents information in the form of pie charts.

Quarterback-up

INDEPENDENT Computer Engineering has ordered more than $500,000 worth of streaming tape drives from Cipher Data Products to provide back-up for the Rodime Winchester disc drives it is selling into the microcomputer market. The tape drives are the Quarterback model, cartridge type.

System takes off

WARRINGTON-based MatEval, manufacturer of the world's first fully programmable ultrasonic flaw detection system, has won a $1 million contract through its sister company Bix America to supply a turnkey system for Martin Marietta Aerospace to test the carbon fibre-based thrust reversing cowlings it makes for large passenger aeroplanes. MatEval has chosen a Hewlett-Packard HP45 mini and UK-made Unimation Puma 500 robot arms to work with its Micropulse ultrasonic tester.

Nuclear deal

COMPEDA'S second nuclear industry customer for its plant design management system PDMS is British Nuclear Fuels. The first was Electricité de France.

Sperry Univac

IN our story "$5bn market for 16-bit micros by 1986" we may have given the impression that Sperry Univac had left the minicomputer market. The company, of course, remains very much in that field.

Unions hit back at IT Year

by Kevan Pearson

THE trade union movement fired off its first blast to the government's Information Technology Year with launch of a film entitled *New Technology, Whose Progress?*

The film's makers, Education Media, backed by the British Film Institute, describe it as "a challenge to the uncritical 'razamatazz' surrounding the microchip". Its launch is timed to coincide with IT Year.

It is highly critical of the view that new technology will "automatically" improve the way we live. The film is also opposed to the view that it is inevitable that the UK must enter the race for increased automation, and that this, by itself, will bring economic prosperity.

Trade unionists on the panel are concerned about the impact the microprocessor will have on employment. "They're eliminating human energy and human intelligence by machines," said Mike Cooley of TASS, "and the reason they do this is that they believe by reducing labour costs that will make their industries more efficient."

Harvey Shaiken, a consultant to the US Auto Workers' Union, took up the theme. He said that a report by the Society of Manufacturing Engineers in the US predicted that by 1985 robots would have replaced one job in every five in the US car industry. By 1990 the figure was likely to be one in every two.

BENN . . . "Cost borne by the taxpayer".

Increasing use of automation and computers is also a tool for increasing management's control over work, says the film.

The final, and possibly most serious criticism of new technology being put forward is that of the leisure society created by automation. "All this stuff about leisure, or increased education or whatever, is absolutely meaningless given the present way our society is organised," says June Stoddart of the Equal Opportunities Commission. "There is no mechanism for distributing wealth other than through the wage, and if people are outside the wage structure they haven't got anything."

These views are the legitimate concern of trade unionists and of society at large. Tony Benn, the Labour MP points out in the film that the cost of increased automation which puts people out of work is borne by the taxpayer.

More government support for computer-aided design and manufacture.

Govt to spend £9m on CAD campaign

by Boris Sedacca

THE government will spend £9 million on an "awareness" programme to encourage small companies to automate their printed circuit board design.

Kenneth Baker, Minister for Information Technology, said more money would be available if needed.

He announced the scheme last week, to promote the greater use of Computer Aided Design, Manufacture And Test (CADMAT) techniques over the next three years.

This follows the Department of Industry's £6 million three-year awareness programme for Computer Aided Design and Manufacture in the mechanical and heavy electrical engineering industries, announced last October.

The funds will be provided over and above the £24 million to be spent on electronics research and development by the European Community over the next four years.

John Noyes, assistant secretary at the DoI Electronic Applications Division, added: "The EEC money is for research. This money is for awareness — this is an evangelical activity."

Noyes claimed that the use of CADMAT could lead to a five-fold improvement in productivity for electronic design engineers.

Baker emphasised that the scheme was "demand-led . . . if companies come forward there will be money made available. I expect that £9 million will be enough, but if it is not I will find more," he said.

"I became aware of CADMAT when I visited GEC and Ferranti, but we have to penetrate well below the big users of CADMAT to smaller companies."

The project will take the form of broadly-based awareness seminars directed at company directors and senior executives, short courses for managerial and technical staff, and live demonstrations of CADMAT working in companies.

The first seminar is to be held in June, followed by a course in September.

A Frost and Sullivan report has forecast that sales of automatic test equipment will grow by a factor of four in Europe over the next decade. The failure by the UK electronics industry to invest in these techniques has been confirmed by manufacturers of CADMAT and automated testing equipment (ATE).

They have found UK sales slumping to near zero in the recession, while other European countries have continued to invest at a steady rate.

Civil Service technology deal 'mainly micros'

by Kevan Pearson

THE draft new technology agreement between the government and the Civil Service unions will mainly affect micros rather than larger computerisation projects like the PAYE project.

After two years of talks, union negotiators have agreed to recommend that their executive committees accept proposals agreed with Cabinet representatives last week.

But the two-year timescale on the agreement means that it will run out long before the larger projects are completed.

The deal is viewed as a breakthrough by both sides since the unions, represented by the Council for Civil Service Unions (CCSU), had held up the widespread introduction of microcomputers in the Civil Service pending an agreement.

In return they have gained a pledge that there will be no compulsory redundancies following the introduction of new technology.

The agreement will be voted on by the full council of the CCSU, including all nine unions, on March 17. If accepted it will come into force on Mareh 22 and will run for two years.

Some of the unions could vote against the deal, though if the largest unions, the Civil and Public Services Association (CPSA) and the Institution of Professional Civil Servants, accept it then the voting would probably reach the two-thirds majority required by the CCSU for ratification.

Both sides have had to give way for the negotiations to reach this state. The unions have conceded that they would not get a shorter working week. The Cabinet has agreed that any people who lose their jobs through new technology will be redeployed.

The definition of new technology used in the agreement concerns "new or modified computers or microprocessor controlled equipment used in the Civil Service which have different staffing requirements."

NEWS BRIEF

CDC and Modcomp in software deal

SOFTWARE and technical consultancy from Control Data Corp is to be available to US minicomputer manufacturer Modcomp in a novel deal which gives CDC part-ownership of its partner.

The software and consultancy go with a new 32-bit processor being manufactured by Modcomp under licence from Control Data. The payment is 90,000 shares in the Florida-based company, about 2% of its equity.

Shugart for Lille

US DISC maker Shugart Associates is to manufacture its SA801 8in floppy disc drives at Rank Xerox's factory in Lille, France. Production is due to start by mid-1982. Other disc products will be made there later this year.

Ada release

TWO new Ada compilers have been released in the US by Western Digital Corp. MicroAda is an introductory compiler based on a subset of Ada, aimed at software development. Programs written in MicroAda can later be recompiled using the second more powerful compiler, which is being submitted to the US Department of Defence in the hope that it will be adopted as the industry standard.

Scottish training

ELECTRONICS training in Scotland must be increased if the demand for skilled manpower at all levels is to be met, according to a written statement from the Secretary of State for Scotland. It adds that steps have already been taken to increase the supply through greater spending on degree and diploma courses in electronics engineering, setting up information technology centres, and providing short courses for technicians.

French flout register

by Jack Gea

FRANCE's National Commission for Information Technology and Individual Liberties (CNIL) reports that only 27,000 operators of computerised files out of over 200,000 now in use are obeying a law which ordered them to register by the end of 1981.

Senator Jacques Thyraud, president of the CNIL, revealed the massive failure to register files when he presented his Commission's annual report at the Council of Europe in Strasbourg.

The CNIL said it had encountered problems in the protection of personal liberties during its investigations of files held by the police, and the Ministry of Justice.

Thyraud said he hoped the French parliament would soon ratify the Council of Europe's convention on databanks.

The CNIL president reported that, although the Socialist government had ordered the issue of computer-produced identify cards for French citizens to be stopped last summer, similar cards were still being manufactured for foreign residents.

Computer diagnoses fraud

hy Frank Raes

WIDESPREAD fraud has been uncovered in Australia by a government computer surveillance team. It has discovered that one out of every 30 doctors has been milking the National Health Fund on a regular basis.

The Fraud and Overservicing Detection System, FODS, says that some 900 doctors in Australia have been milking the health service of A$100 million annually.

FODS, which has been in operation for about 18 months, has used a computer to sift through more than 80 million claims for medical benefits payments made by Australian doctors each year.

From the 1975 inception of a centralised National Health scheme, called Medibank, a computer system was used to develop complete profiles of a doctor's practice and thus detect divergence from norms. The result of this monitoring was the identification of doctors involved in overservicing and frauds.

The computer has revealed that the most common areas of abuse are where medical practitioners padded consultation times, claimed for questionable house-calls, exploited home visits, and undertook needless pathology tests and X-ray examinations.

At first, the Australian Medical Association expressed disbelief at the magnitude of FODS findings, but later publicly conceded the computer's accuracy, after its own economic and statistical experts had confirmed the original diagnosis of dishonesty.

The FODS analysis confirms what was asserted some years ago by computer industry sources in Australia, when the AMA and other doctors' groups strongly opposed the introduction of centralised health benefit schemes, that such opposition stemmed from doctrinaire considerations and from a fear that the use of the computer would expose and quantify the extent of fraud perpetrated by some doctors on health schemes.

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Petnet low-cost modems to ease user access

by Donald Kennett

TWO low-cost modems are to be developed specially for Commodore's Petnet, a remote software and message network which is set to be the UK's first fully commercial bulletin board and telesoftware publishing service.

Tangerine Computers, makers of the best-selling Tontel range of viewdata adapters, will make the modems.

Petnet is currently running trials with about a dozen users on the ADP Network Services bureau. It is due to go live later this year when Commodore has decided on billing arrangements and assessed the market.

The Petnet service is similar to a viewdata service in that it holds pages of text in a hierarchical tree structure, with movement through the tree being made by choosing from a menu of up to 23 items on a directory page, or by backtracking up the tree.

Pages can also be accessed directly, if you know their numbers, instead of working towards them through the directories. But one of the differences from viewdata is that the pages are numbered in the order that they are put on the system, irrespective of their position in the hierarchy.

This means that users control the growth of the database and it can grow indefinitely in any direction. Shortcuts through very long chains can be set up by telling users to go directly to a numbered page from any point in the hierarchy, rather than by multiple-stage menu selection which provides only one route to each page.

Another difference from viewdata is that program listings need not be split into pages. Another is that page or listing charges can go up to £999.99, rather than 50 pence as on Prestel.

Education will be a major target market. Green thinks there is a need for hundreds of simulation programs in each of the sciences. Petnet will aid their rapid development, improvement and circulation, he believes.

The new modems will both operate at the viewdata-compatible speeds, receiving data at 1,200 bits-per-second and sending at 75 bps. But they will also be able to send at 1,200 bps and have auto-answer capabilities as well as the normal auto-dial.

Tangerine technical director Dr Paul Johnson said that his development department has more work than it can handle, but he is keen to push the project in order to maintain market leadership.

Petnet designer Nick Green said he wanted the 1,200 bps half-duplex facility because it was important to make it as easy to upload pagefuls of data from a software author's micro as to download it to the purchaser's.

Marketing director John Taylor, Tony Ebel and sales rep Michael Dick of Quest at CAD system launch.

All set to galvanise CAD market

by David Craver

A LOW-COST computer-aided design system which its makers hope will stir up the depressed UK CAD market has been released by UK manufacturer Quest Automation.

The product, Q-design, is aimed primarily at the first-time user who has been unwilling or unable to make the necessary investment in a sophisticated turnkey system.

The UK is not making the necessary investment in CAD, says managing director Tony Ebel, who adds that 90% of the systems Quest sold last year were exported. Ebel welcomes CAD awareness schemes being announced by Technology Minister Ken Baker (see page 5), and says that company budget restraints have meant that investment predictions of 15 months ago have not materialised.

Quest's own budget picture has been muddled of late, with unexpected first-half losses announced recently and no upturn expected until next year. The company says, however, that it is looking to the long term, and has raised substantial funds through a rights issue and a loan and share options deal with British Technology Group.

The new Q-design system is for printed circuit board applications, but products for mechanical design, including architecture, civil engineering, and pipeline design, are on their way. Cost for a stand-alone system is under £25,000, which provides a graphic workstation with two interchangeable worktables.

One workstation has a 14-inch, high resolution colour graphics display with digitising table, while the second has a control display and keyboard for system messages. Position of the worksurfaces is power adjustable both vertically and horizontally.

The system is based on the Quest 1600 minicomputer with half a megabyte of memory and from 10 to 96 megabytes of hard disc.

Praise and blame for French consultants

by Jack Gee

THE French Government is mixing praise with criticism for its computer service and consultancy firms whose 38,000 staff are producing a turnover of FFR90 billion (£1 billion) a year.

Robert Lyon, head of Prime Minister Pierre Mauroy's personal office, told a meeting of Syntec Informatique, which groups two-thirds of these firms: "You are marking up exceptional performances. You have woo your spurs by entering Codis." Codis is the French Government's investment venture in advanced technologies.

But the government has also been critising France's computer services and consultancy firms for providing temporary jobs rather than full-time employment. Temporary work is currently the target of the Mauroy administration.

The computer service organisations have also suffered from a poor national image among their clientèle and are now trying to promote themselves as an all-French patriotic industry.

Computer service firms in France now earn 12% of their turnover from systems engineering, 39% from intellectual assistance, 38% from lending equipment, 4% from keying in data, 4% from management and 3% from other sources. A group of ten companies accounts for almost 35% of the industry's total turnover.

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Small units	.....Men's teams	
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If you have a query on Computastars please get in touch with the organiser at 1176 High Street, Croydon CR0 1QG. Tel.: 01-688 6690.

Events may not turn out exactly as expected — this is last year's relay race.

Still a chance to star at the DP Olympics

by Andrew Thomas

THERE'S still time to enter this year's DP Olympics, Computastars. The first UK heat will be for the South, and will be held at Crawley on May 15. The London area gets its chance at Enfield on May 23, the North on June 13 at Barnsley, and the Midlands at Birmingham on June 26.

The UK finals will be held at Birmingham on Saturday, July 24, with the European final taking place in Belgium later in the year.

Computastars is a team and individual competition for DP people which calls for athletic skills on field and track, in general sports and in the gymnasium. Events can range from long jump and discus to the fearsome steeplechase, but part of the attraction of Computastars is that competitors don't know what's coming until they arrive at the venue.

Entries are open to men's and women's teams of between three and five, and any number of teams can enter from a single user or supplier company. Only personnel who are fully costed to data processing activities are eligible for entry, and each team must nominate a "Number One" who will compete in all events for the individual title.

For the first time, there are special categories for small firms employing fewer than 25 DP staff within a radius of 25 miles, and veterans, who must be over 35 on February 1 this year. These classes are being run this year for men only.

The team captain must select three members to compete in each event, one of which must be the Number One.

Run alongside the main competition is Computatug, the tug-of-war contest, open to teams of five men or women who are not already competing in Computastars.

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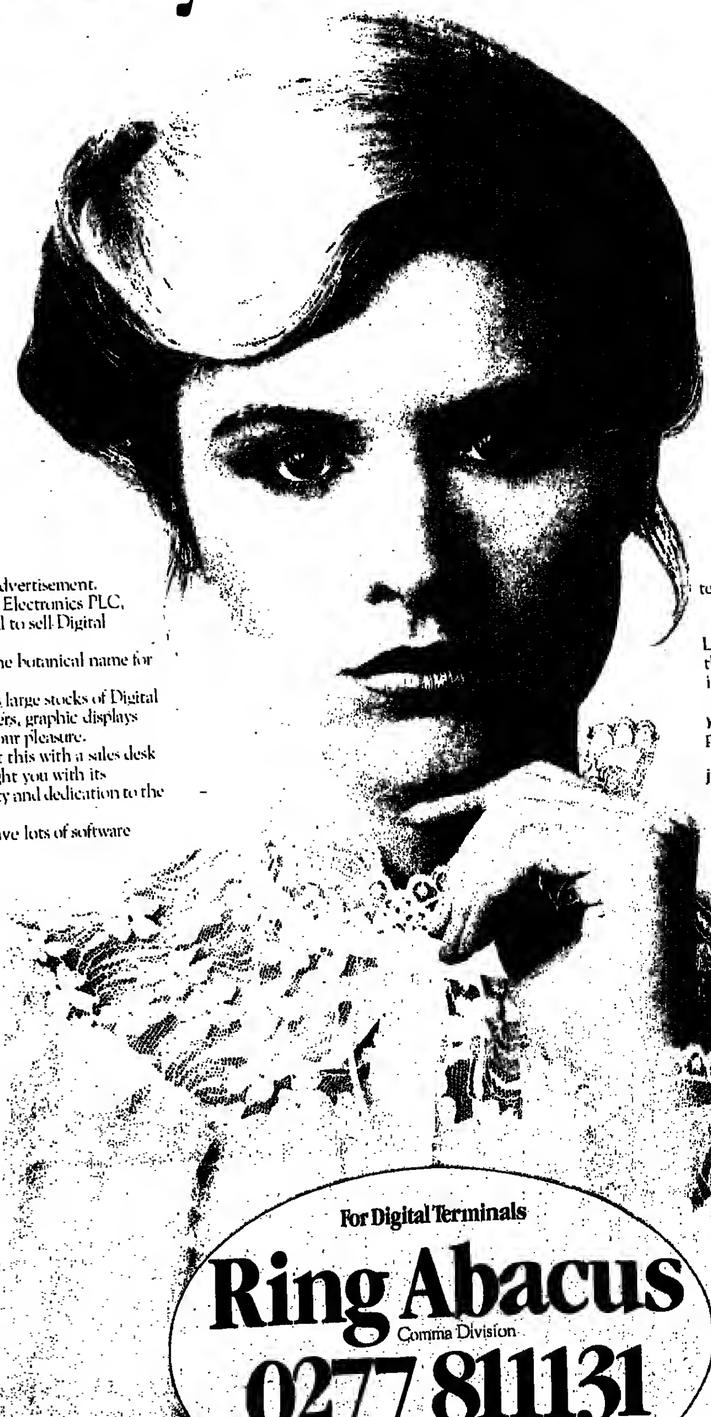

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NEWS BRIEF

Irish modems firm launched

THREE former employees of Telectron have launched Cornell Electronics to manufacture modems and related products. Their aim is to establish in Ireland a total data communications service to the Irish market and to build up exports based on locally-produced products.

TV trial

GRANADA Television Rentals is to start a trial with 10 NCR 2950 point-of-sale terminals in April that could result in 500, costing about £2 million, being installed next year. The trial follows a one-year study of point-of-sale systems with which Granada could replace the cash registers in all its UK showrooms.

Central monitor

BLACKHEATH-based systems house Brown's Operating Systems Services has enhanced the viewdata terminal support facility on its IBM-compatible cluster controller to enable the entries being made through up to seven terminals on the controller to be monitored from the central site. This means that a salesman at the central site could help customers to enter their orders, or the system could locate faults quicker.

Siemens US deal

SIEMENS has signed an agreement with Xerox in the US to market its Ethernet high-speed coaxial cable based local network and its System-8000 integrated text and graphics workstation in West Germany, Switzerland and Austria. Office information systems accounted for about 20% of Siemens' communications-related sales last year.

LIARDET . . . Optimiser grew out of a Digitus product.

Linear programming comes to micro users

by Claire Gooding

A COMPANY'S promise to set new standards in microcomputer software was put to the test this week when Caxton Software Publishing released its first product.

The program, called Optimiser, is a tool for making the best use of resources. Users can use a microcomputer to juggle around the various ingredients of a problem, be it the making of beer or the allocation of an advertising budget, to reach the most efficient cost-effective solution.

The technique, known as linear programming, has long been used in large-scale production, but Caxton's aim is to make it available to micro users as a management aid. The package costs £295 for the Apple computer, about £2,000 for the entire system, and there are plans to release Optimiser for the CP/M operating system before long.

Although Caxton is aiming first at existing users of linear programming by offering a cheap alternative to time sharing, it expects to interest new users as well.

When Caxton was formed last year by Alan Wood of Digitus, Bill Barrow of Data Logic, and David Tebbutt, one-time editor of Personal Computer World, the emphasis was on making things easy for the end user.

The firm saw itself as a sort of talent scout for British software, providing the services of packaging, professional marketing and distribution to the programmer who had ideas, but not the resources to sell them. When formed last October there was no product line to prove the point.

The documentation supplied with Optimiser is certainly thorough. "The tutorial level for the real beginners holds the user's hand — very tightly," explained Tebbutt.

"It will even tell him things like . . . the disc drive will whirr and click . . . so that he's sure of being on the right track."

Author of Optimiser is Digitus programmer Mike Liardet, who stands to gain glory rather than royalties because Optimiser grew out of a Digitus product.

"The linear programming algorithm was a fairly small part of the programming effort," he said. "Trapping user errors and providing the user interface were far more significant in terms of development work."

Fujitsu in attack on US rivals

by Kevin Cahill

FACED with growing American criticism of Japanese computer companies, Fujitsu president Takuma Yamamoto has launched a strong attack on two of America's technology giants, IBM and American Telephone & Telegraph.

In an interview with the Japan Times, Yamamoto said that competition with IBM, which dominates the world computer market, "was as big an issue as governmental trade control."

He claimed that despite IBM's position, some of Fujitsu's computer technologies are more advanced than IBM's.

"In some areas of both hardware and software Fujitsu was the first to market new products, and IBM followed us," he said.

Fujitsu has been locked in battle with IBM in Japan for over 20 years and has only recently pushed IBM into the No 2 slot there.

Yamamoto says that to narrow the gap with IBM, Fujitsu often has to sacrifice its own brand name. "Nearly 90% of Fujitsu's computers are to be exported for sale under the name of foreign companies," he said.

Turning to AT&T, which recently rejected a bid by Fujitsu to supply fibre optic cable for the new light wave communications system linking New York and Boston, Yamamoto said that the company apparently made a mistake in inviting foreign companies to tender.

AT&T turned down the Fujitsu tender in favour of a more expensive quote from one of its own subsidiaries.

AT&T is alleged to have claimed that Fujitsu was putting in an underpriced bid to get the business, a claim which according to Yamamoto, "damaged Fujitsu's reputation and was totally unfounded."

GLC gives backing to IT Year

by Rory Johnstoo

COMMUNITY groups, clubs and other voluntary organisations in London now have a chance to use microcomputers and word processors free following the setting up of a room in County Hall especially for the purpose.

Greater London Council has provided the room, with four micros and two word processors, as part of its contribution to Information Technology Year. It is intended to keep the room going when IT Year is over.

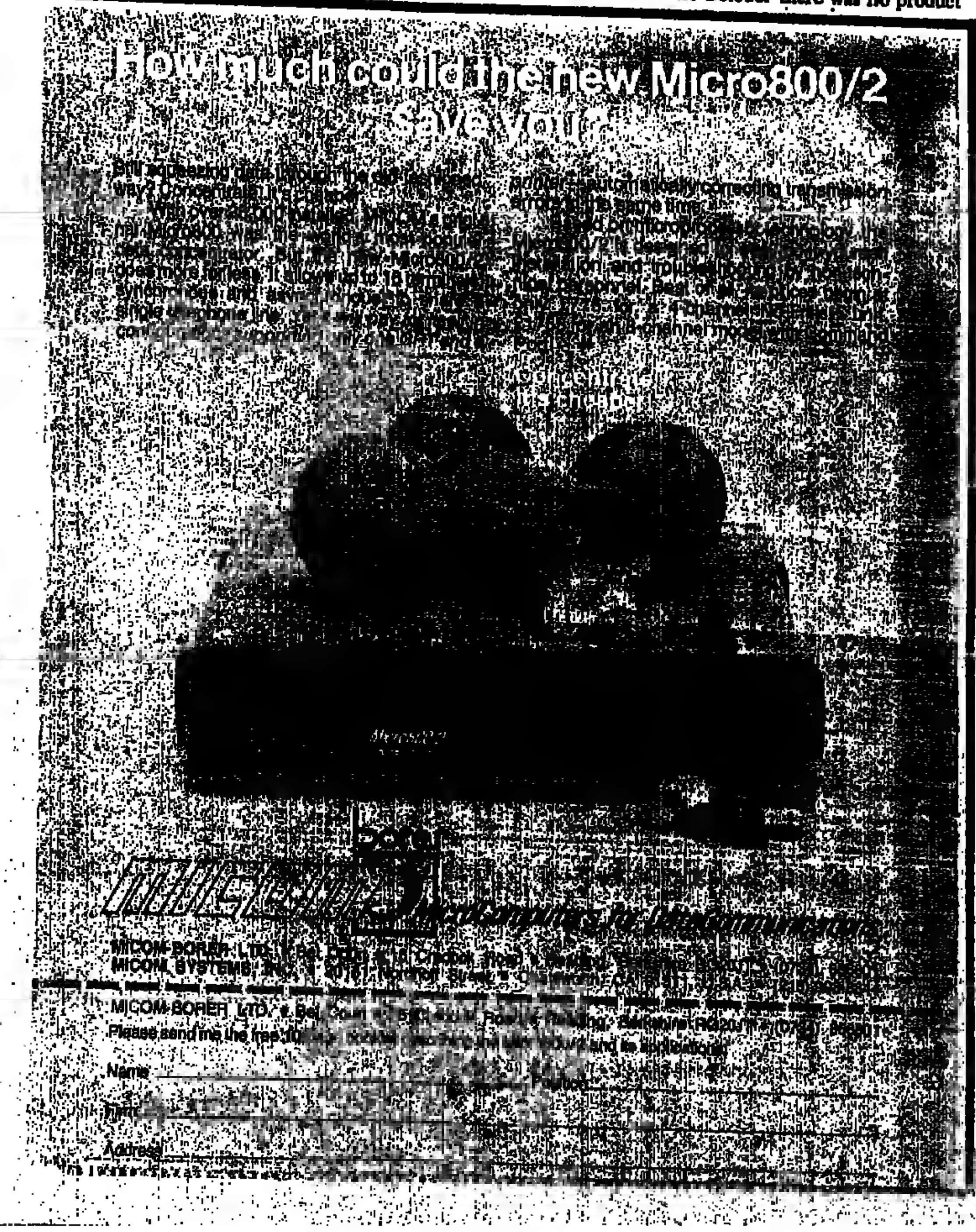
To help the groups run the equipment, the GLC is looking for expert volunteers from the industry to come forward, since the Council cannot provide any staff. A group wishing to run a mailing list for newsletters or publicity will be able to keep the list on one of the word processors. The micros can be used for accounts, databases, and the like.

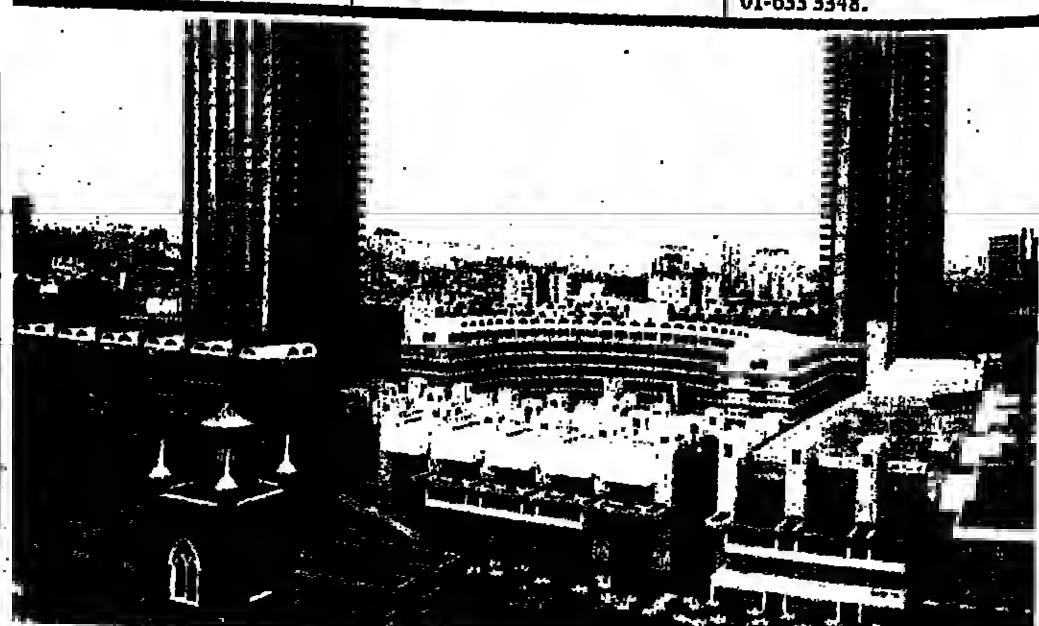
David Perry, of the GLC DP department, says one computer professional who has a particular interest in wildlife has already made himself available. Volunteers for other fields are being sought, which would probably involve assistance in the evenings.

Almost any voluntary groups, including trade unions, will be able to use the facilities, but not political parties or commercial organisations. Manufacturers can lend equipment to the room and in return will be able to use it for demonstrating to prospective customers.

At the moment the equipment consists of Wordplex and IBM word processors, a Pet, an Apple, some Acorns, a Prestel set, and terminals to the GLC's mainframes.

One organisation that has already expressed an interest in using the facilities is the Rape Crisis Centre, says Perry. Any others, and interested volunteer experts, should contact his department on 01-633 3348.





The Barbican Centre will use the BOCS reservation system to book 6,500 seats each day.

BOCS books in at Barbican Centre

by Kevin Cahill

BOCS beats Boris at the Barbican.

No, not a new kind of wrestling, but the name of the two software packages which were tendered to provide the £140 million Barbican Centre in London with its real time box office reservation system.

BOCS, a DEC-based system supplied by Space Time Systems, emerged as the winner this week when the Common Council for the City of London turned down the ICL offering, Boris.

According to Angus Watson, head of publicity at the long-awaited arts complex, the system would be installed in time for the Barbican Centre's opening this week.

When the booking office opens with over 6,500 seats to sell each day, the £200,000 BOCS, which is based on a DEC PDP-11/44, will be able to take reservations from each of 16 terminals scattered throughout the centre.

At the same time, Space Time Systems have announced that BOCS will be installed in Cardiff to take bookings for the St David's Hall Welsh National Conference and Concert Centre, and in Warrington to handle the bookings for the new Spectrum Leisure Centre there.

Hasler takes telex device to PTTs

by Donald Kennett

THE UK subsidiary of the Swiss data communications company Hasler is going after French, Dutch and Belgian PTT approval for its recently-launched word processor-to-telex converter, claimed to be the first of its kind.

The device is already approved for attachment to the UK telex network. BT Gold, the new independent company set up to market the Dialcom electonic mail service on behalf of British telecom, has bought three for its connections to the telex network.

Product manager Paul Cawthorne said 30 of the devices had now been supplied and orders had been received for 300.

Software to enable the Intertec Superbrain minicomputer to use it has been approved by BT, and Hasler is preparing to submit software for the Apple and Pet.

The prices are from £1,200 each for one to £650 each for 25.

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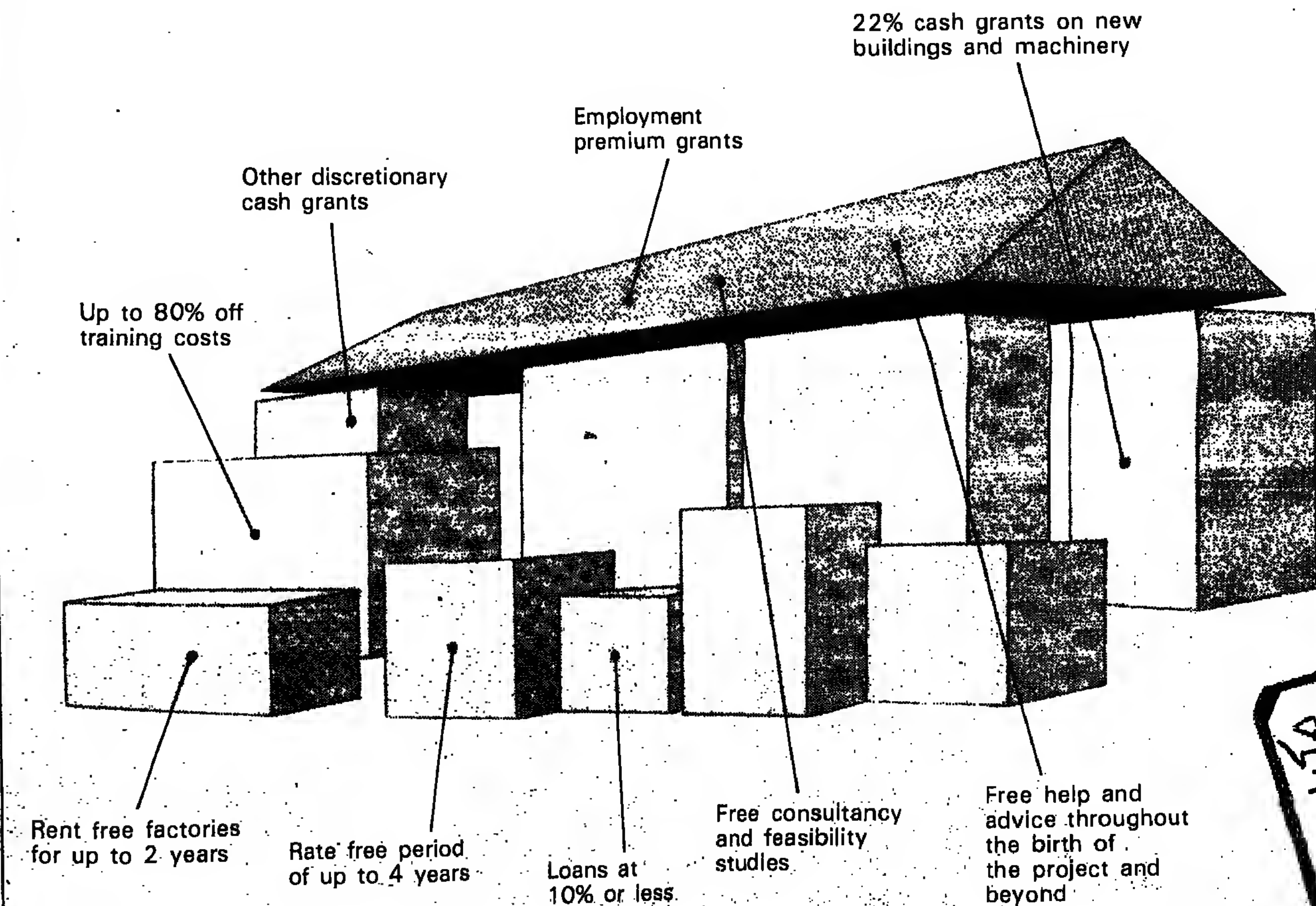

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Robert Parry reports from Computer Weekly's Microsystems '82 held in West London last week

Optical modems take off

FIBRE optic data links for microcomputer systems are beginning to take off, with people now buying equipment to build into products.

Gavin Dyer, sales manager of Systems Production of Farnborough, Hampshire, aims to increase shipment of fibre optic modems and multiplexers, currently in the high hundreds, three or four times this year.

"Fibre optics are now moving from the embryo stage into products," commented Dyer. "We will definitely sell equipment as a result of the show."

SPL's first military order for optical modems to be embedded into VDUs has been received. The VDUs will be used in applications requiring high performance in rugged environments while maintaining data security.

On the industrial front Versatec, California-based plotter manufacturer, has ordered £20,000 worth of fibre optic modems to install in a range of high-speed remote plotters. The optical links were chosen to cure data corruption problems.

DYER . . . *Increasing shipments.*

ATKINSON and PORZAK . . . *Tamsys is one of three UK distributors signed by Vector.*

Packaged software boost for UK

MOVING into the UK with a big push in packaged software products, Vector International, the Belgian-based European representative of Digital Research, has signed up three British distributors.

At the same time, Digital Research has announced in California that it will be working closely with Intel to develop a multi-tasking multi-user operating system for the new iAPX 286 16-bit processor. MP/M-286 will support the full memory protection and management and the virtual memory facilities the chip offers.

Intel will supply prototype hardware for Digital Research to work on, meaning that the operating system may appear at roughly the same time as the chips do in any number. Sixteen-bit languages and applications running under MP/M-86 and CP/M-86 and 8-bit CP/M packages would then provide a software base for using the device.

Tamsys in Windsor will distribute the whole range of Digital Research products in the UK – led by the standard operating system for 8-bit micros, CP/M, and its derivatives – says David Atkinson, Tamsys' software marketing manager.

Xitan Systems of Southampton will also carry the full range, but the Legal Connection of Fareham, Hampshire, will only handle CP/M-86 and languages for the 16-bit 8086-based IBM Displaywriter.

Jim Porzak, Vector's standard software division director, says that Vector itself will be setting up in Tunbridge Wells in April. It will supply market support to the distributors and UK OEMs and hold local stock of the software products.

"The big push will be on CP/M-86 for the Displaywriter," says Porzak, who hopes CP/M-86's availability will encourage software people to move to 16-bit systems.

The Displaywriter, IBM's major entry into the word processor market, has all the features of a general-purpose microcomputer except a general purpose operating system, according to Vector. The CP/M-86 implementation will open up a wide variety of application software to Displaywriter users.

Vector's main European activity for the next six months will centre around the Digital Research languages, CBasic, CB-80, PL/1-80 and Pascal/MT+.

Availability and support will be pushed, and documentation translated into various languages, which will help UK OEMs to sell in Europe, Porzak says.

A 16-bit version of Pascal/MT+ will be launched in the US in mid March, and Porzak reckons Vector should have stock by the end of March. Other languages in 16-bit versions will follow by the middle of the year, he adds.

One strange facet of Vector's stand at Microsystems '82 was the presence of packaged software for DEC's VT180, the VT100 terminal with the option converting it to a CP/M microcomputer. "We are offering the four languages as packaged products, but we have no hardware to demonstrate them on," Porzak commented wistfully.

Made-in-Britain 16-bit has Unix related system

A FORETASTE of this year's anticipated feast of new 16-bit microcomputers has come from three month old Integrated Micro Products.

Built in Britain around the Motorola 68000 processor, the machine has 256K of RAM, an 8-inch thin line floppy drive and a 5¼-inch Winchester disc as standard. Idris, the Unix-related operating system from Whitesmiths, is included in the basic system, with Pascal and C compilers.

A pre-production prototype of the IMP-68 was on show at the Microsystems '82 exhibition in West London last week. It attracted a gratifying amount of interest for the new Tyneside company, which is looking for finance as well as custom for its first product.

Microsystems is Computer Weekly's show for technical and industrial microcomputer users and for systems builders. It is intended for visitors who want to buy components and peripherals to build into systems, who build or use microsystems in process control and product applications, or who use microcomputers for technical jobs like design engineering.

Attended by senior engineers and management – development engineers, research managers, software specialists, directors and the like – the show has been running since 1978. This year at the West Centre Hotel it has concentrated on these technical areas, but has been notable for the software houses it attracted.

Integrated Micro Products was set up three months ago, after Joe Dawson and Alan Cleary, partners in Real Time Systems, the European distributor of Whitesmiths' US software products, were approached by Mark I'Anson and Dave Liddell of Riseconn Electronics.

I'Anson and Liddell had a 68000-based S-100 bus card and, looking to put a Unix-type operating system on it, went to Real Time Systems. Dawson and Cleary wanted to build hardware, so the company was formed. Within three months the system was boxed – in a case styled by a brought-in industrial designer – with Idris up and running.

"You've got to move fast once you get going," comments Dawson. The main problems encountered were with the interrupt handling, but these are now solved, he adds.

He sees the main market for the machine being OEMs and people wanting to develop application software for the 68000. Some application software, cross compilers and assemblers for microprocessor development, are already available from Real Time Systems, and word processing software is on its way from one of its customers.

This will initially be written for an LSI-11 system, but because of the ease of transportability that Idris affords it should not require much effort to move onto the IMP-68, according to Dawson.

System software support will be supplied by Real Time Software, which is clearly closely linked with Integrated Micro Products. Dawson and Cleary are both partners in RTS and directors of IMP.

3D snaps up school project micro

THE tale of successful microcomputers that started out as a development by two men in a garage is a potent one. The success of companies such as Apple has tempted many into the microcomputer jungle.

Now, from London-based 3D Digital Design and Development, comes an 8-bit microcomputer that started out as a school project from three Sevenoaks sixth formers.

At an exhibition two years ago, 3D's directors Alan Mills and Kahtan Kibasi were approached by the schoolboys with a 6809-based board they had built as a prototype system to help with their software writing.

It was running high resolution graphics and space Invader programs, and they wanted to develop it further.

The result of this development is the 3D09 system which was shown in public for the first time at this year's Microsystems exhibition.

The 6809 machine, with 64K RAM and a controller to run four floppy drives of any type, according to Mills, is aimed primarily at the scientific and technical market. It costs £2,800 with twin floppies giving 2 Mbytes of storage.

"There are any number of computers around in the commercial area, and lots of dealers with experience in fast and furious competition," says Mills. "Our machine will serve as a commercial system, but the main thrust, at least to begin with, will be the technical line."

This reflects the nature of 3D's main business since it was set up four years ago. It places most emphasis on interfaces for IEEE 488 bus systems, having started out with a printer interface board for the early Pets, before Commodore itself provided one.

"We saw a hole in the market for Pet printers, and were then approached for a whole range of products on the 488 bus. We expanded from there, getting into custom work, commissioning and installing systems, and writing software, but staying in the technical area."

He sees the operating system 3D offers for the 3D09, Flex, and the machine's multi-tasking capability as powerful features. An IEEE 488 interface card will be available soon, and then the machine will only lack colour and hard discs, Mills says.

The system can run a couple of remote terminals, for remote data entry and interrogation of the system, but true multi-user operation will have to wait until the Uniflex operating system, a blend of Unix and Flex, is implemented. Mills says 3D will be looking at this at the end of the year.

He claims that the memory boards, which run at 2 MHz with no wait states through the design of the refresh circuitry, are faster than most Z80 systems.

He also says that the best of the Basic interpreters 3D can supply, a pre-compiler giving intermediate code, is very fast. He reckons it is about 11 times faster than a Pet system.

William Morel, one of the three sixth formers, agrees that it is "quite an improvement" over his original prototype, built with £350 raised from industry by his teacher to encourage his out-of-hours programming.

MILLS . . . *Aiming at scientists*

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MICRO NEWS by Robert Parry

Inmos 'undecided' on methods of financing

WHILE the UK factory of Britain's government-backed chip company Inmos takes high tech shape in Wales, continuing speculation surrounds its future investment plans.

Reports abound of plans to raise capital from private or government sources, and to build new plants in Britain, or Japan, or the US, but Inmos itself is not giving much away.

The official line is that Inmos will be looking for external finance to grow, and make the most of its opportunities. This has always been the intention of Inmos and the National Enterprise Board (now the British Technology Group) that put up £50 million to set up the operation.

But the method and timing of such finance has not been decided, Inmos says, adding that it would not wish to exclude from its thinking any particular source of finance.

This is backed up by Mike Wright, director of Inmos' UK operations division. "We are within our finance, and capable of supporting our manufacturing operation. But every semiconductor manufacturer needs more investment."

Inmos' ability to attract private money will depend on whether it can convince potential investors that the company will be a successful force in the market. While some observers believe prospects are not good, Inmos seems sure of its chances of success.

With the products already in production in the US factory, turnover has passed $1 million a month and is rapidly growing. Bookings are running well and several contracts worth over $1 million have been signed.

Inmos claims significant market penetration in the obvious market for 16K static RAMs – for building into computers – including good customers in Japan.

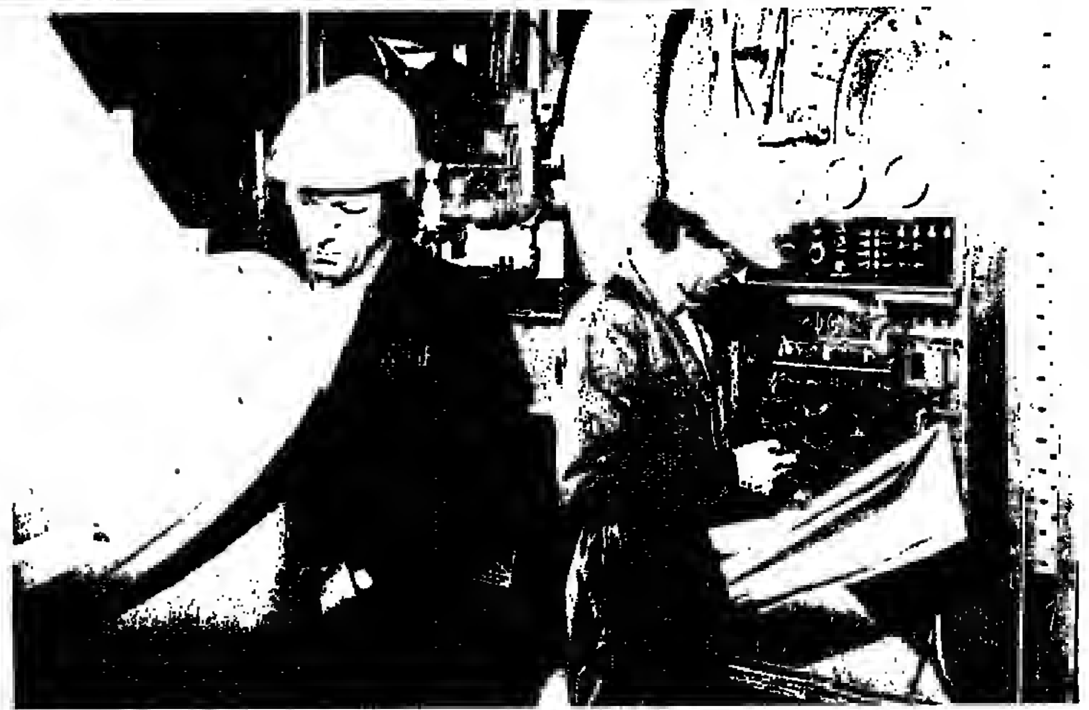
It estimates it has between 60% and 80% of the market for fast 16K statics with speeds below 70 nanoseconds.

The 64K dynamic RAM is just entering a market dominated by Japanese manufacturers and subject to severe price cutting. The Inmos device is set at the top end of this market, with high reliability, speed and price, but Inmos believes that the performance is what will be wanted and customers will pay the price premium.

This part is likely to be the first product through the UK plant at Duffryn, just outside Newport in Gwent. Next week the wafer fabrication area there should go "clean", gearing up for manufacture of pre-production batches by June and full sale manufacture from July.

Work is on schedule for all equipment to be in place and commissioned towards the end of May.

Emphasis will be placed on reliability and quality of devices produced at the factory. All incoming materials will be checked to make sure they meet the required standards and there will be extensive testing of manufactured devices at all stages of production.


Plant room at Inmos' Duffryn factory.

Details of planned microprocessor devices are still thin on the ground, but Iann Barron, Inmos co-founder, has indicated the general nature of a device under development at the design centre in Bristol.

It is termed a "transputer" and will consist of a large amount of memory with a small but powerful processor on the one chip.

This will allow it to process large quantities of information quickly, particularly necessary in applications such as telecommunications and video processing.

The transputer will not appear before the end of next year, and until then the company's fortunes seem to rely on the memory devices. There is little doubt about the quality of the designs, only about whether the market will want such devices.

Digital to release T-11 as single chip

DIGITAL Equipment's chip level PDP-11 microprocessor the T-11, is to be available as a single chip from April. The device has only been sold on the Falcon single board computer since its launch last November.

The T-11 is a 16-bit processor running a basic PDP-11 instruction set, compatible with the range of LSI-11 boards and PDP-11 minicomputers. It can have a 16-bit or 8-bit data bus, user-selectable for performance (16-bits) or lower cost (eight bits).

Five micron technology puts 13,000 transistors on a die five millimetres square. The number of transistors was minimised to give the small die size at a low cost.

The move from DEC's six micron technology, used in the LSI-11/23 two-chip set, involved considerable redesign, giving an increase in circuit density of 30%, about twice what would be achieved by a simple linear shrink.

The T-11's smaller scale circuitry makes it operate faster while saving 20% of the power needed. Running off a 7.5 MHz clock, its execution speed is roughly the same as a PDP-11/34, and twice that of a PDP-11/05. It runs faster than the two-chip LSI-11/23, and draws less than 0.8 Watts.

Like the Falcon board, the T-11 chip is aimed at control applications, ones using "buried intelligence" – with processors built into equipment for process control, for example – according to Edgar Valentine, DEC's LSI marketing manager.

"The intention is not to compete with other products, rather to offer a downward migration path to established DEC users," he says.

Valentine does not see the device competing directly with specific chips from other manufacturers either. It will add to the spectrum of eight and 16-bit devices available to designers, he says.

A great advantage for the processor, in his view, is the ease of transferring expertise in developing application programs gained from work with VAX-11, PDP-11 and LSI-11 systems.

The device will be available in sample quantities from April, with volume following in the summer. Rather than offering just sample chips, DEC will be producing a "starter kit", containing a small number of T-11 chips, documentation, software and tools needed to get acquainted with the microprocessor.

The kit will sell for several thousand pounds, Valentine reckons.

Unlike the kits, which will be sold through distributors, the chips will only be available direct from DEC, at below £100 in OEM quantities.

Intel makes higher performance promise

HIGHER performance for processors and memory devices is on its way from Intel.

An 8 MHz version of the 8088, Intel's externally 8-bit but internally 16-bit microprocessor, has been introduced, a 60% performance advantage over the 5 MHz standard part.

"Our HMOS-II technology enables the 8088-2 to achieve the highest performance available from any 8-bit microprocessor," claims Jeff Miller, marketing manager of Intel's microprocessor components operation.

But HMOS-II (high performance metal oxide semiconductor), developed in 1979 from Intel's proprietary HMOS process, is now no longer the highest technology for memory and microprocessor devices.

A third generation, HMOS-III, will improve circuit density and performance. The gate delay for HMOS-III is half that for HMOS-II, at 200 picoseconds.

It has two micron design rules, and is the first Intel HMOS technology to use wafer stepping lithography and dry etching to attain the required tolerances.

Existing components can be directly shrunk to be manufactured in the new process, giving better density and performance without redesign. This means customers do not have to cope with changes other than the increased speed.

The part has a 15 nanosecond access time, compared to 45 nanoseconds for the HMOS-II 2147H and 70 nanoseconds for the HMOS 2148.

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RAPPORT

Last week Kevin Cahill listed the goals of the Fifth Generation project. . . Here he describes how they are to be achieved

Human brain is the pattern for Japan's futuristic system

MUCH of Japan's industry is driven along lines which are laid down by agreement across government and private sectors. Computers are no exception, and the Fifth Generation project which has now been defined is remarkably candid about what is intended.

The driving force is to overcome the country's grave disadvantages – Japan has too many people, not enough food and raw materials, and an almost complete lack of indigenous energy.

These are the basic goals set out for fifth generation computer solution. A breed of systems is needed which combines natural language input with genuine VLSI (very large scale integration) technology.

The world is currently in the fourth generation of computers, little more than bigger and faster versions of the IBM 360 series, which characterised the third generation.

The Japanese intend that the fifth generation computer system will solve problems, and not, as many current systems tend to do, simply make problems go around faster.

The first step in orienting these systems towards true problem solving, according to the preliminary issued by the Japan Information Processing Development Centre, JIPDC, is to base the design on those social goals which could realistically find a technical solution.

This approach, though attractive in that it provides socially useful and therefore politically acceptable goals, has the disadvantage of not furnishing clear guidelines to project managers. To ensure that the end result was a unified system, and not a series of conflicting technologies each of which appeared capable of achieving the desired outcome, research objectives and functional goals were set up from the beginning.

The goals laid out for the research and development phase of the project, which is expected to last until 1984 for the basic technologies, are as follows:

"The fifth generation will have the following basic functions:

1. Problem solving and inference functions.
2. Knowledge base management function.
3. Intelligent interface function."

To achieve those three functions in one system, the report estimates that the hardware will have to operate at between 100 million and 1,000 million logical inferences per second. (According to the report, one logical inference using existing computer techniques would take between 100 and 1,000 machine instructions to execute.)

The idea of making a machine operate by means of logical inferences, as opposed to the current chain logic mode of conventional software, is extremely ambitious. It is an attempt to emulate the way in which the human brain itself appears to function, by rapidly making trial and error estimates, skipping across logical pathways which, if followed, would make human activity incredibly slow.

The system is consistently seen as an interaction of the three key areas identified above.

> **Interface between man and computer will approach the human level**

The inferential functions are derived from the machine's ability to access a huge knowledge-based (as opposed to database) management system, which in a typical fifth generation machine will hold between 100 and 1,000 gigabytes of data. The inferential functions themselves are initiated by an interface system which will allow for speech, graphics and natural language input.

In short, what the Japanese researchers will be looking for is an overall system to which you can address your problem in whatever your everyday language happens to be, and from which you can get, not the next step in the problem, but the complete solution fully programmed and resolved. They expect that the system will deliver certain levels of solution in a matter of a few seconds.

A summary of what the research phase is expected to deliver is shown in Figure 2.

The fifth generation "will be oriented towards processing knowledge information and will have quite a high logic capability," the Japanese say. Its greatest feature will be that "interface between man and computer will approach the human level."

Describing current technology the report says that man-machine interface has taken place via procedural programming languages. To solve a problem with the help of a computer, man had first to describe, model and program the problem.

In many cases this has meant unpicking long established formulae and rewriting solutional procedures which work well enough in their existing form.

The Japanese Fifth Generation project is an ambitious attempt to install a problem solving and definition procedure into the basic structure of the final machine.

The report states that the new machine system will use logic programming languages or problem solving languages for trial and error logical inferences.

"The Fifth Generation computer system will always utilise knowledges required in series processing, beginning with inputs such as speech, natural languages, pictures or images from the human system, and extending to understanding these inputs, synthesising and executing programs around them, and generating responses.

"These knowledges include a knowledge of languages, a knowledge about images, a knowledge about problem domains, and a knowledge about the mechanisms and data expression of the machine system, all stored in a knowledge base."

In terms of simple functioning, the project is intended to deliver computers which will be able to understand a problem description and from that description generate a model and synthesise a program based on the model.

To achieve this extraordinary goal the Japanese members of the team have already laid out a theoretical hardware configuration (shown in Figure).

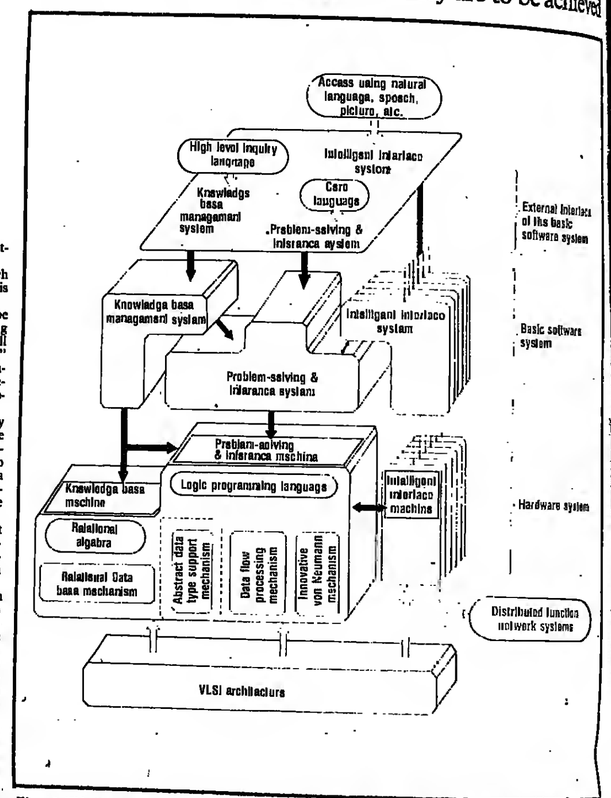

Figure 1. This diagram represents the current Japanese originated 'image' of what the Fifth Generation system will look like when it finally appears in 1991. Essentially it is not one single computer, or computer type, but a series of interconnected database and parallel processing machines front ended by an interface machine which can accept problem statements in a natural language.

Central to the machine processing procedures themselves are von Neumann techniques. These are currently used in a number of existing computer types, including the Cray series, and essentially involve the application of linear algebra to parallel processing functions.

"The hardware architectures shaping the functional components will be based on a combination of six machines. These are the six machines that are being studied as the likely candidates to establish the new architecture. The machines will be so combined by adopting the distributed function architecture, namely by applying the modularisation, adoption and microprogramming techniques."

> **The Japanese are not proposing a hardware revolution as such, neither are they stepping too far into the future**

For the smaller computers of moderate performance "a firmware base architecture built on innovative von Neumann techniques will be adopted."

In a vital comment on the internal operations of the smaller fifth generation machines, the report indicated that new languages will be invented.

"For the powerful large scale systems data flow machines including functional machines will serve as the core technology in their construction," it says.

The actual intended functioning of the fifth generation "multiple" CPU is spelled out as follows:

"For the problem solving and inference computers the execution part in the logic programming machine will use a large-scale data flow mechanism for its execution and the knowledge base will be processed by a small-scale, high-speed relational algebra machine. [This] will use a suitable data flow mechanism for its execution."

The report then goes on to say that "a large-scale knowledge-based computer will use as its core a large-scale relational database machine including a relational algebra machine."

By so clearly emphasising the parallel processing and database type functions at the core of the new machine, the Japanese are not actually proposing a hardware revolution as such, neither are they stepping too far into the future, since they intend that the hardware itself – the memory chips and logic circuits – should be fully specified by the end of 1984.

Based on the current state of the art, that suggests a 10,000 gate logic circuit chip for the processing functions in the machine, and 256K or one-megabit dynamic RAMs with access times of around 50 to 100 nanoseconds. In fact, it suggests that the Fifth Generation is looking to the overall structure rather than the hardware, to provide the solutions.

For any machine to work in the manner in which it is intended that the Fifth Generation will work, the machines must have access to an unusually high level of information, uniquely structured.

In the global knowledge base which will service the system the JIPDC report has identified three sub-knowledge bases. These are: "a general knowledge base similar to common sense, a systems knowledge base which will gather knowledge related to systems, and an applied fields knowledge base which will gather together knowledge about certain applied fields."

The general knowledge base will include: "bases of basic words in everyday use, basic sentence patterns and basic scripts, a base of dictionaries of various languages and sentence construction rules, and other bases related to natural languages."

The systems knowledge base will include: "bases containing specifications for the system itself, such as a processor specification description base, an operating system specification description base, a language manual base, a program module base containing programs which are highly usable, and other bases."

> **The system will take ten years to produce**

The application knowledge base will include a VLSI design technology base, a computer architecture base, a basic program base, and other bases.

According to the latest reports from the Japanese Ministry of International Trade and Industry, which is the co-ordinating body for the project, the Fifth Generation system will take ten years to produce.

The whole project will be in three phases, the first of which, the basic research into technologies, will commence this year and end in 1984. MITI plans to invest $47 million in this initial phase.

The second phase, the development of the sub-systems, will begin in 1985 and end in 1988. The final phase, the development of the total systems, will start in 1989 and finish in 1991.

So far Britain, France and West Germany have accepted the Japanese offer of some participation in the project. One commercial company, Sperry Univac, has also indicated that it wants to be involved.

Basic application systems	1–1 Machine translation system 1–2 Question answering system 1–3 Applied speech understanding system 1–4 Applied picture and image understanding system 1–5 Applied problem solving system
Basic software systems	2–1 Knowledge base management system 2–2 Problem solving and inference system 2–3 Intelligent interface system
New advanced architecture	3–1 Logic programming machine 3–2 Functional machine 3–3 Relational algebra machine 3–4 Abstract data type support machine 3–5 Data flow machine 3–6 Innovative von Neumann machine
Distributed function architecture	4–1 Distributed function architecture 4–2 Network architecture 4–3 Database machine 4–4 High-speed numerical computation machine 4–5 High-level man-machine communication system
VLSI technology	5–1 VLSI architecture 5–2 Intelligent VLSI CAD system
Systematisation technology	6–1 Intelligent programming system 6–2 Knowledge base design system 6–3 Systematisation technology for computer architecture 6–4 Database and distributed database system
Development supporting technology	7–1 Development support system

Figure 2. Topics currently under development (from the JIPDC preliminary report).

SOFTWARE FILE — **by Maggie McLening**

Legal link-up pools databases in UK and US

POOLING of data between companies with similar interests may be given a boost by the international linking of legal databases.

Eurolex, the UK-based division of the International Thomson Organisation, has announced a link-up with Westlaw, the online legal research service of West Publishing Co in the US. This will give UK users access to full-text information about federal and state law in the US, as well as UK, EEC and other European law.

Many bureaux offer access to banks of numeric information built up by outside companies or organisations, often located in several countries. Geisco and SIA have international scientific databases, and I. P. Sharp is now offering clients access to economic information compiled by Business International in New York and the Organisation for Economic Co-operation and Development.

The Eurolex-Westlaw link will create a database containing 600 Mbytes of legal text and research material consisting of references and precedents. Eurolex is leasing space on IBM and Amdahl equipment owned by BOC Datasolve, which will also provide networking support. Pilot connections are now being set up for the transatlantic link via the International Packet Switching System.

Software for the project was developed by the Atomic Energy Research Establishment at Harwell, under advisors Norman Nunn-Price and Professor Bryan Niblett. It is a non-dedicated system, and will link up via a telephone line to 90% of standard teletype equipment, according to Charles Arthur, marketing manager for Eurolex, so that customers will not need to invest much capital in specialised hardware.

"The beauty of this system is that it's British and it's competitively priced," commented Arthur.

Eurolex users pay £45 per hour for access to the database, which is ostensibly less than clients of Lexis, the telepublishing arm of Butterworths, the legal publishers, which has a legal text database held in the US. Lexis charges £1.20 per minute, but claims that it works out cheaper because access is faster.

"We have gone to the expense of installing our own transatlantic machine cable, and customers dial into our multiplexer at Bell Yard," explained Kyle Bosworth, Lexis marketing manager. "You can read through 60,000 volumes of law reports searching for one word in four seconds at 9 a.m. The same search still only takes 12 seconds, later in the day when the Americans are using the system as well."

Competition between Eurolex and Lexis for customers in the UK will inevitably be fierce, because of the limited number of people able to understand the text held on the systems.

"There are only 40,000 lawyers in the UK, compared with 78,000 in the state of California alone," commented Bosworth.

As well as qualified members of the legal profession, many universities, polytechnics and government departments subscribe to one or other of the systems. Eurolex claims to have 90 users in the UK, including ICI, and a number of European clients, while Lexis has over 2,000 in the UK and "many thousand" in the US.

The next step for both companies will be to expand the service to cover more countries. Lexis is in the process of adding French case material, but Eurolex is keeping its options open.

"We have an open-ended policy for the future," said Arthur. "We are open to gateway arrangements throughout the world."

Information on Merseyside Transport's 1,200 vehicles will be provided by Busman.

Bus system tells passengers where to get off

A BUS fleet operating system, which provides passengers with route instructions as well as local timetables, is being installed by the Merseyside Passenger Transport Executive.

Developed by Wootton Jeffreys & Partners, the system is designed to increase the number of riders by expanding their awareness and knowledge of public transport, according to Richard Williamson, associate partner of the Woking-based systems house.

Merseyside Transport has a fleet of 1,200 vehicles. The Transport and Schedule Compilation, or Busman, module which it has ordered will initially be provided on a bureau service while an assessment of savings is made.

Busman covers the four main requirements of a bus company: operations, planning, marketing and administration, and produces timetabling and personalised passenger information as a spin-off. The operations package forms the nucleus of the system, covering such tasks as crew and vehicle scheduling and production of bus hours, mileage by area, and crew relief opportunities.

The system runs on the Prime range of minicomputers from the model 400 upwards, but Wootton Jeffreys plans to extend it to other equipment when demand has been established.

"We would like to make it more portable," explained Williamson. "We could take the input/output part and put it on a micro. Linking with mainframes will also be possible."

The system can be used to produce detailed instructions for routes involving travel on buses, tubes or by rail, and can generate a timetable for a neighbourhood to be handed out for publicity purposes.

"Half the people travelling round the public transport system are unaware of the opportunities it offers. Our object is to increase ridership by awareness and knowledge," Williamson explained.

Costs of the system are on a sliding scale, from £20,000 for a large operator, such as London Transport, down to £6,000 for a fleet of 100 vehicles.

Core dumps bypassed

PLOUGHING through core dumps may become a thing of the past for IBM DOS users following the UK release of a debugging tool by Namic, the Luton-based software distributors.

Namic has announced the availability of Abend-Aid, a product that uses the computer to analyse aborted program runs, for DOS/VS and DOS/VSE machines.

Developed and owned by Compuware of Michigan, Abend-Aid is stored in the Shared Virtual Area of the operating system and intercepts calls to the standard IBM core dumping process when a run aborts. It then examines error codes and produces an analysis of the run failure, allowing the run to continue with a core dump if there is insufficient information for the programmer.

No special programmer action, compilation or JCL is necessary for installation, although it is possible for the user to override the tool if required.

"We have a 'user exit' option, which allows the user to insert a JCL card to select only certain types of failures for analysis, or to request dumps for everything," explained Steve Fagan of Namic.

Namic claims an 85% success rate for the package in solving program cancellations, and says that it reduces machine overheads by saving printer time and paper on core dumping.

Costs for leasing Abend-Aid vary from £650 to £1,670 per year, but Namic offer a 30-day free trial period for user evaluation.

There are currently 1,200 installations world-wide, 300 of which are in Europe.

SOFTWARE BRIEF

DBMS for Vic

MARCH will see the introduction of a database system for the Commodore Vic 20. It has been produced by Stage One Computers of Poole, Dorset, and is expected to cost around £50. Stage One claims this is the "first serious business-type program on the Vic".

Timelord to US

TIMELORD, the time recording, microprocessor based package, is to become available in the US and Canada under the new name CTT 3000. Its designer and manufacturer, ITR International Time of Poole, Dorset, has appointed Cincinnati Time of Ohio, a subsidiary of General Signal Corp, as a representative.

IBM enhances WP

ENHANCEMENTS announced by IBM for its popular word processor, the Displaywriter, will enable it to be used for data entry, inquiry, update and personal computing. It will now support datastream compatibility under IBM's Systems Network Architecture (SNA) for certain functions of the 3270 family of data processing displays and printers.

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COMPANY NEWS–1

IT production beats slump with 12% rise

DESPITE tho recession real growth in UK production of information technology products is running at 12%, according tn a report by Honry Cook Lumsden and Co. The Manchester-based stockbroker is a leading computer analyst.

The report, which seeks tn establish the major trends in the high technnlogy sectors, defines information technology as the convergence of computers, communications and office systoms.

Neil Barton, the author, says that with investment per office worker presently only one twentieth that of factory workers, office automation will be nne of the major growth points of the economy over the next decade.

His opinion about the prospects for growth in office automation closely follnw those of somo Japanese commentatnrs who have pointed out that there is some form of automation in 90% of Japanese factory activity, but less than 4% of office jobs in Japan have any form of technology associated with them.

Neither Barton nor the Japanese, however, point out that generally profits arise from factory activity, while office activity is an overhead in financial terms.

This could mean that growth predictions based on existing estimates of the office population could be exaggerated unless snme allowance is made for rationalisations and manpower reductions in offices.

Barton is sanguine about the so-called "Japanese threat" to the world's high technology industry. Ho says that tho frightening speed at which tho technology is currently changing makes it difficult fnr Japanese volume production to achievo supremacy.

He observes that the Japanese are concentrating on semiconductors, an area in which they have seriously damaged the American industry.

Barton's account reflects the American view of the position, but there is some reason to doubt tho extent of actual "damage" done to the US semiconductor manufacturers by the activities of the Japanese.

Price-cutting in 16K and 64K chips has been widespread among American as well as Japanese companies, as both have tried to counter the effect of weak markets, particularly in the US itself.

Barton's report, which is intended primarily for investors, looks at a number of sectors in the industry, and sets nut growth prospects.

Application anftware. According to Barton the likely growth rate in this sector over the next few years will be 30%.

One contributing factor is that tho number of computers being delivered into use is growing ten times faster than tho population itself. This has produced a demand for systems analysts and programmers far in excess of the conceivable supply, thereby potentially greatly increasing the cost of software.

Barton sets out an interesting table which shows the change in tho relationship hetween programmers and machines over the years.

Programmers per computer:

1965	3.0
1975	1.3
1980	0.5
1985	0.2

Part of this change is attributable to the inclusion nf micros in the figures. Barton says that with tho extensive development of standard operating systems such as CPM, and latterly Unix, the growth of mail ordor sales of application packages and operating systems will be substantial.

He identifies ACT as the most successful UK company in terms of software publishing, but bemoans the fact that so far no UK company has emerged to challenge American dominance in the field.

In 1981 ICL created an application systems division which is currently investing £25 million in the creation of application packaged software, some of which will be used on micros such as the Rair Black Box which ICL now markets. ICL's investment is a quarter as big as the amount that the Japanese computer industry is pouring into software — currently £100 million.

Viewdata. The report estimates that growth in the provision of viewdata-type services will average 30%.

Barton identifies IBM as a weak supplier of viewdata technical capability, and suggests that the market leador is Cullinane, which sells its IDMS database management system via ICL.

ALUN-JONES . . . leading Ferranti's drive on the electronic office market.

The market for viewdata products is still very dependent on British Telecom. Barton makes no comment on the extent to which the growth of Prestel has been hampered by non-volume strategy pricing by BT. But he does say that "regrettably, British Telecom continues to be starved of the necessary funds to update the telecoms network."

Barton predicts that newspaper and publishing companies will be in the forefront as suppliers of viewdata services.

Desktop computers. Surprisingly, Barton predicts that growth here will average about 30% per annum over the next few years.

Usual estimates for this sector range between 50% and 100% with companies liko Apple and Sord growing at between 100% and 300% now. However, Barton, perhaps accidentally, highlights what is likely to be the brake on rapid growth over the next few years.

Given a central filing database and printers, the existence of small computers will extend the ability of office workers to do their jobs, he says. But the problem is the central filing system.

According to a series of reports late last year the hardware available to do computing tasks has long ago outstripped the software or structural techniques available to make effective use of even existing systems.

Michael Whittaker, an industry analyst at brokers Simon and Coates, suggests that up to ten years of productivity gains could be made from simply applying the power of existing computers effectively.

According to Barton, 15% of American office workers had a personal computer in 1980 and by 1985 more than 30% are expected to have one.

Tho leading supplier of standalone management workstations is probably Xerox, says Barton, but in the UK he reckons that tho lead position is shared by IBM and Triumph Adler (via office and electronic machines).

Graphic computers. The highest growth rate of any sector in tho IT industry is predicted fnr the graphics area.

Without elaborating on the relationship hotween hardware and software, Barton reckons that growth in this area will be 35% over the next few years.

Sales of any significant size cannot be expected in this field for several years, partly because the UK's leading suppliers in the area — Quest, Ferranti Racal and ICL — are not offering products which are cheap enough to attract volume sales.

Mainframe computers. Recently this sector of the market has shown the slowest growth rate, forcing ICL to devote its energies to other areas.

Despite this comment, and the lowest growth prediction he makes for any IT sector at 12%, Barton says that in his view many UK customers who did not purchase last year only postponed investment decisions, and feels that a catching-up process is now beginning.

Data communications. Against a traffic growth estimate for the next decade of 45% per annum, Barton reckons that growth in real terms for products and equipment will stick at about 15%. The principal growth area within data communications is expected to be multiplexers.

Forecasts to 1983 for UK companies

ALONGSIDE a general account of UK companies which are active in tho field of information technology products and supplies, Neil Barton's report makes a series of predictions about specific companies in the sector.

A selection of his forecasts and comments is included below.

Applied Computer Techniques (ACT)

Profits at ACT to March 1981 were £0.8 million. The forecast by Barton is that the company will make £1.0 million in 1982 and £1.4 million in 1983.

From an investor's point of view, ACT is considered expensive by Barton.

Computer & Systems Engineering (CASE)

Describing CASE as a well-managed small company with a high technical reputation in the data comms market, Barton forecasts that the company's pre-tax profits will rise from last year's £0.9 million to £1.2 million this year, and £2 million by the end of 1982.

Although the 10p shares are now selling at about 225p, which gives the shares a price/earnings ratio (the measure of likely dividend payment) of about 27, Barton recommends CASE as a strong buy.

Ferranti

With Ferranti, led by MD Derek Alun-Jones, about to make a concentrated drive on the electronic office market, profits there are forecast to reach £23 million to March this year, and rise sharply to £30 million by March 1983.

ICL

Barton says that ICL has now completed the launch of its new product range, with a considerable reorientation towards desktop computers. A good first quarter is indicative of the resurgence of this company.

Following restoration of the profits next year, growth of 25% thereafter is seen. ICL is at the centre of the British IT industry and the Department of Industry aims to keep it there.

Barton suggests that ICL will report a £25 to £30 million profit to September 1982 and £60 million to September 1983. Needless to say, he regards the share as a strong buy.

Anti-trust settlement brings sell-off in computer company shares

THE settling of the US government's anti-trust action against IBM will be good for IBM and not so good for the rest of the industry, according to a leading Wall Street computer industry analyst, Peter Labbe.

Labbe, who works for stockbrokers Smith Barney Harris Upham and Co, says that already the settlement has precipitated a sell-off in computer company shares.

The settlement will be a positive help to IBM in that it will cut down the management time wasted and reduce legal expenses. Some estimates put those as high as $12 million in the ten years the action hung around IBM's neck.

In the longer term Labbe says that it may give IBM a freer hand in the move into ancillary marketing.

Apart from that, however, Labbe says he is hard pressed to see what is different.

"We have seen nothing in the past years (if not more) to suggest that IBM has been inhibited in any way in marketing, pricing or product development by legal restraint."

The substance of the original case made by the US Justice Department was that the bundled pricing tactics used in the Sixties by IBM contributed to IBM's dominant market share.

IBM unbundled in 1969 and, according to Labbe, there should be no immediate or direct change now that the industry has lived in an unbundled environment for 12 years.

Labbe says that IBM does not in any case compete with the traditional mainframe computer companies, which have all been losing market share recently.

He also observes that IBM is really competing, although indirectly, with the alternatives from the minicomputer industry.

"This competition has not been affected by anti-trust at all and the general effect has been to narrow the price-performance differentials over time and support the de facto IBM environment standards."

IBM's own minicomputer effort, which Labbe describes as moderately successful, demonstrates the problems of late entry for a company which is offering a relatively unsupported system compared with the well supported main line (mainframe) systems. The ending of the anti-trust action can actually be seen as a plus for the whole industry, according to Labbe.

He says that, following the settlement, "We know who IBM are, what drum they march to and its characteristics. Such standards as exist in the industry are de facto IBM standards."

Had IBM been broken up Labbe suspects that a "jungle" would have resulted.

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COMPANY NEWS – 2

by Kevin Cahill

Americans take lion's share of UK govt grants

GOVERNMENT statistics for regional grants allocated in the third quarter of 1981 show that computer companies, almost exclusively American, received £2.8 million out of the total £159.7 million allocated throughout the various development regions.

The sum itself is relatively small and the fact that most of it has gone to companies with overseas parentage is also a sad reflection on the UK computer industry.

The bulk of the grants were allocated in Scotland, with IBM getting most.

In the Scottish development region, IBM's Greenock plant, which employs 2,300 people, received a total of £1,089,000 for the quarter.

The grants have been used for a variety of purposes, according to the company, including the new materials distribution centre.

Other computer industry beneficiaries from the Department of Industry's largesse include DEC at Ayr, which received £28,000, Hewlett Packard at Boness (£38,000) and NCR engineering at Dundee (£79,000).

The semiconductor companies Motorola and National Semiconductor each received substantial grants from the government.

Motorola was given £980,000 at its East Kilbride plant, and National Semiconductor got £297,000.

Hughes Microelectronics, which specialises in military applications, received £28,000 for its plant at Glenrothes.

In the Scottish development region no UK computer or semiconductor company received any grants for the final quarter of 1981. All the money went to companies with a parent based in America.

IBM's Greenock plant received a total of £1,089,000 for the quarter.

The main recipients of regional development grants in the Welsh area were Matsushita Electric UK which received £156,000 for projects at its Cardiff plant, and Inmos which received £61,000 at its Newport works.

The only computer company to receive anything in the North region was Burroughs, which received £66,000 at its Cremlington works.

No grants were made to computer companies in Yorkshire, Humberside, the East Midlands, or the South-west.

Similarly in the North-west, no computer firm appears in the list of companies, which received a grand total of £28.4 million.

Golden 1981 for Plessey

THE final months of 1981 continued rewarding for Plessey, with sales and profits substantially increased.

Reporting for the nine-month period ended on January 2, 1982, the company showed profits of £78.8 million, a 19.7% increase on the same period last year. Sales for the nine months were 14.6% ahead at £673.9 million, and exports from the UK rose 31.5% to £83.5 million.

Plessey has entered 1982 with an order book worth £1.2 billion compared with £1.1 billion at the end of 1980.

According to the company most of its major business areas did well, telecommunications in particular.

In the electronic systems and equipment division sales increased from £180 million to £214 million for the nine-month period.

Microelectronics and components showed unchanged sales for the period, but profits improved 26.2%.

IBM investors 'uneasy'

WITH the IBM annual report due shortly, the American investment community on Wall Street looks uneasy about the company.

IBM's preliminary figures, which appeared about six weeks ago, showed that profits had slumped by 7% in 1981. However, the preliminaries contained no details of the company's balance sheet.

IBM began last year with about $2.5 billion in medium- and long-term debt on its books.

It also had recorded on its books at the end of last year over $5 billion worth of lines of credit — promises of loans — from various banks.

With the lines of credit established before the end of the financial year, the company would not necessarily have to advertise that it had used the loan commitment.

If IBM has taken up the loans, the company will be saddled with a $5 to $7 billion debt, at a time when American interest rates are very high and profits down.

The cost of a $5 billion debt at current prime rate of 17% would be $850 million, a little over one-sixth of gross profits.

CW SHARES TABLE

Date 26/2/82 — Index: 101.52 — Change +0.10

London Stock Exchange (Pence)

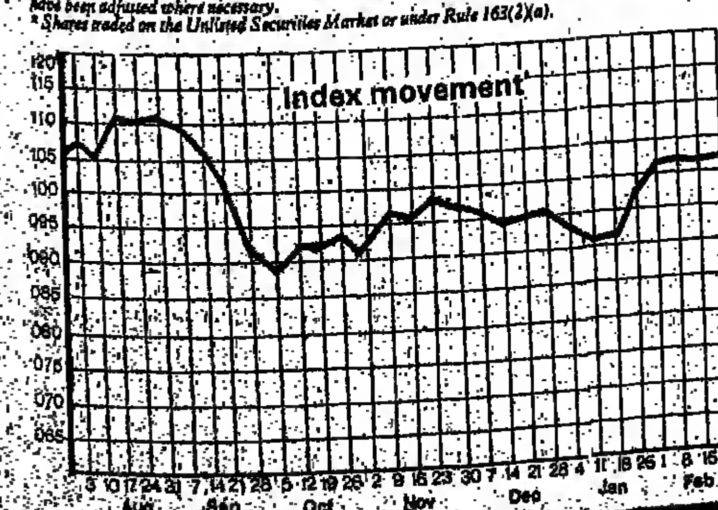
1982 High	1982 Low	Stock	Price	C'nge
183	161	ACT (App Comp) (25p)	175	+5
174	150	BOC Intl. (25p)	163	−4
23	21½	B Bov Kent (25p)	21½	−1½
115	101	Chubb (20p)	112	−2
58	48	Cole Group (25p)	58	−
260	220	C.A.S.E. (20p)	242	−3
730	685	De La Rue (25p)	685	+10
275	235	Extel (25p)	275	+5
670	625	Ferranti (50p)	660	+20
547	502	GEC (25p)	514	−15
51	39	ICL (25p)	44	−4
47	41	Kalamazoo (10p)	42	−2
277	223	Kode Int (25p)	277	+27
230	215	Memec (10p)	230	+5
132	110	Muirhead (25p)	126	−5
278	262	N'mkt ('81) (£0.05)	253	−3
£29½	£28½	Norsk Data	£30½	+£2
315	288	Office & Elect (25p)	315	+15
505	445	Philips Lamp (f10)	505	+13
370	348	Plessey (50p)	348	−22
97	88	Quest Auto (10p)	90	−5
430	363	Racal Elect (25p)	363	−17
206	171	Rediffusion (25p)	205	−1
468	431	Thorn EMI (25p)	453	−10
90	90	UC&T (50p)	90	−1
		OTHER MARKETS*		
95	83	Bos Comp (10p)	83	−2
467	450	Comp Serv (£1)	454	−
107	78	Consult (C&F) (10p)	107	+
190	131	NMW (£1)	158	−
55	53	Rolls & Nolan (10p)	53	−
105	75	ScanData (10p)	95	−
195	190	Star Comp (10p)	190	−
106	104	Trident Comp (10p)	104	−1
85	85	Zygal Dyn (5p)	85	−2
$		US Stocks	$	
29½	25	Amdahl	27¾	−

US Stock ($)

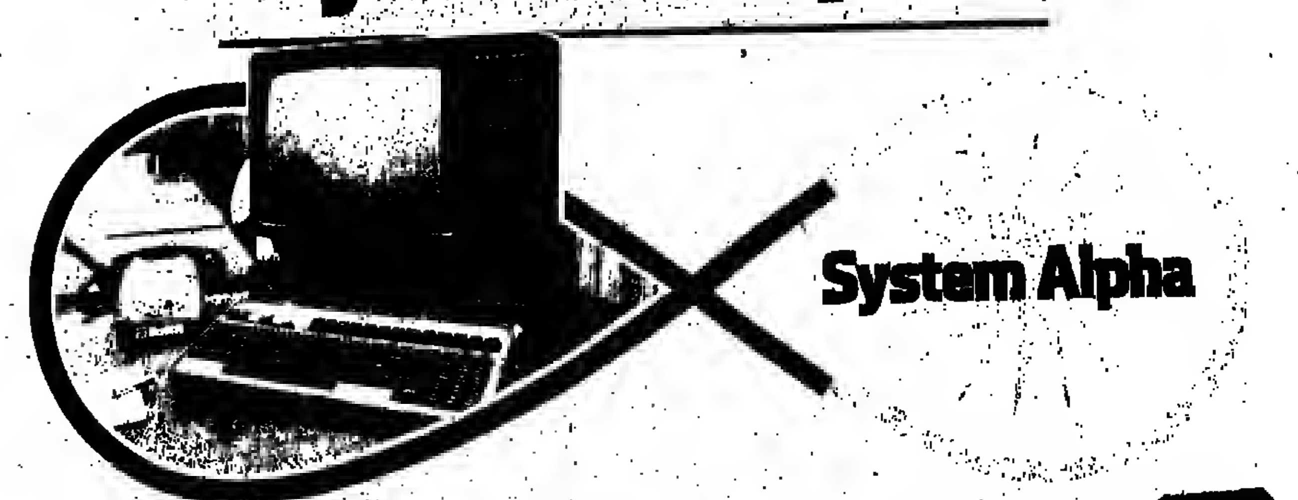
1982 High	1982 Low	Stock	Price	C'nge
20¼	15½	Apple Inc	15½	−¼
29¾	23¼	Auto Data Pro	25	+¼
36½	31	Burroughs	34½	+2¼
48¾	41½	Commodore	44¼	−4
13¼	10	Comp Auto	12¾	−
15	12¼	Comp Sciences	14¼	+⅜
15½	12¼	Comshare	12¾	−⅜
38½	31½	Control Data	35½	+2
38¼	32¾	Cray Research	32¾	−
53¼	45½	Data General	45½	−1¼
48½	28¼	Datapoint	28¼	−½
20½	18	Dataproducts	15¼	−¾
97½	80¾	Digital Equip	84¼	−3¼
23¾	20	Elec Data Sys	21¾	+1¼
6½	4¾	Gen Automation	4¾	−1
38¾	32½	Harris	33	−1¼
43½	39	Hewlett-Packard	43¼	+1¾
78	63	Honeywell	76	+2¼
28¼	20¾	Intel	25½	+⅜
62¾	57	IBM	61½	−¾
56	50½	Litton Ind	60½	−½
12¾	11¾	MDS (Mohawk D)	11¾	−
22	19¾	MSA (Mngmnt Sci)	19¾	+ 1¼
11½	10	Mngmnt Assist	11¼	+¼
8¾	8¼	Modular	7½	+½
60½	52	Motorola	53½	+½
20¼	15¼	National Semi	20¼	+¾
48¾	40½	NCR	45¼	−1¼
29¾	21¼	Perkin-Elmer	20¾	−½
23¾	21¾	Prime	23	−2½
28¾	21¼	Raytheon	21¾	+¼
25¼	23	Signal	23¼	−¼
34	29¾	Sperry Comp	29¾	−1½
34½	30½	Storage Tech	30¼	−2¼
27½	24¾	Tandem	24¾	−2
35	31¼	Tandy	31¾	+3
82¼	70¾	Texas Inst	82¼	−2
27¼	18¼	Tymshare	18¼	−⅜
30¾	26¼	Wang Lab B	30¾	+½
9	7½	Wyly	8	

Table shows the closing prices of The London Stock Exchange on Friday and in America on Thursday. The share index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.

* Shares traded on the Unlisted Securities Market or under Rule 163(2)(a).



"Clear the desks for System Alpha"



The world's first Teleputer system

System Alpha is a new multi-technology communication system.

It combines television, personal computing, viewdata/videotex, VCR or videodisk and telecommunications in one simple to use multi-media, multi-purpose workstation.

It takes up as much space as a hi-fi system.

System Alpha offers a variety of models based on a 14" colour videotex terminal with local page store, PSS interface and many other sophisticated facilities, plus choice of keyboards and printer.

Facilities include:

* VCR or videodisk * Local microcomputer with 64kb memory and twin floppy disk storage for processing * Choice of two operating systems * Videotex microcomputer for telecommunications

System Alpha is versatile. It can be a computer terminal, a word processor, a computer-assisted learning system, a mail order catalogue, a remote batch terminal, a data processor, a viewdata/videotex terminal, a colour graphics computer or simply a first class colour television.

It can be used in home or office — by anybody who can use a keyboard.

For further information simply contact: Product Marketing, Rediffusion Computers Ltd., Kalvin Way, Crawley, West Sussex RH10 2LY Telephone: 0293 31211

REDIFFUSION Computers

To: Product Marketing, Rediffusion Computers Ltd., Kelvin Way, Crawley, West Sussex RH10 2LY. Please send me more information about System Alpha.

Name

Position

Address

The way business is going

Fifteen years is a long time in the industry

Alwyn Jones is senior tutor in the business systems analysis team at City University in London. His special interest is in the application of systems ideas to the practice of systems analysis and design.

LOOKING through desk drawers some weeks ago as part of a New Year's tidy-up I came across a diary for 1967. It was kept up diligently as far as mid-March, which for me is about par for the course.

The year 1967 was about three years into my computing career and just about three months into my responsibilities for computer education. I can still remember the dreaded mixture of excitement and fear that the education task prescribed, because my brief was to consider the data processing learning requirements for, on the one hand, young students already launched in computer science basics, and on the other more mature "uneducated" commercial programmers and analysts on day-release.

The number of textbooks on business data processing at that time were countable on the fingers of an armless man.

This dreaded excitement it was, then, that led me to ask plaintively of my diary: "I wonder how distant is the day when to admit to being 'something in computers' will be as passé as admitting to being 'something in the City' is today?"

I won't go into whether the second part of the comparison was a fair comment, but shall assume that you can see that I was driving at.

Apart from a few covert wishes discernible to me now in that rhetorical question – such as the one for the day when teaching the subject from a book might reduce the ludicrously high lecture preparation time by 90% – I remember that it was my practitioner's hat that I was consciously wearing when I wrote it.

At the time I found myself living a noticeably double life. In the work environment I was something of a Kermit – bright but still green – while in the educational environment I was regarded, rather embarrassingly, as an awe-inspiring expert.

And it wasn't just the word "computer" that inspired that awe but also the associated phrases "data processing" and "systems analysis."

Nowadays, it is rather different. People are much more likely to have come into contact with computers in their work. They are familiar with the idea of processing data by computer and with the analysis of a problem with the aim specifically of producing a computerised system.

Even the abbreviations DP and SA hardly seem jargon to them now. There is a possibility even that the very need for the specialist systems analyst and programmer is believed to be fading. "You don't *need* a chauffeur to drive your car, nor a degree to be able to drive it yourself, and now that we have microcomputers for the price of television sets, the argument can be transferred to data processing."

If the use of computers in the business environment does become as easy as driving a car, I hope I shall be among the first to see it and admit to it, but from what I see at present I don't think that this will happen for a long time yet.

If you are a worried analyst who thinks otherwise you may call me a cock-eyed optimist. I turn the tables and call you pessimistic.

In reply to your "They don't need our specialist skills any more" argument, I tell you that you are over-reacting to the threats of a rapidly changing environment. Doctors, architects, engineers, lawyers, mechanics, plumbers – these among others have all had to cope with changes in recent decades.

They have continued to exist as professions and trades in spite of the genuinely usable do-it-yourself machinery that has become publicly available.

There are, of course, special problems in connection with computer work. For example, titles are still under a process of change. O & M, the seed-bed of systems analysis, has certainly receded as a specialist job title, although O & M is still what every good systems analyst practises. "O & M plus computing" is still a reasonable way to define systems analysis; after all.

The systems analyst is still "something in computers" and perhaps it is rather passé to admit to being that nowadays. It doesn't sound as adventurous as it did in 1967, certainly.

But it is a very much needed type of specialist job in my view and that is much more important than whsre it stands in the fashion stakes.

Alwyn Jones

10 YEARS AGO

From Computer Weekly of March 2, 1972 . . .

THE Treasury offered to reduce charges paid by freight agents using Laces, Heathrow Airport's computerised cargo system to £6,000 annually per VDU – about £2,000 a year less than its original proposition . . . A data link between BEA's Rome office and the Beacon Computer Centre in London was inaugurated by British Ambassador Sir Patrick Hancock . . . Ampex announced the discontinuation of its European end-user sales operation . . . A new era for ICL began at the annual meeting of International Computers (Holdings), when Sir John Wall announced his retirement as chairman of both ICH and ICL. He was replaced by one of the ICL board's Plessey representatives, Tom Hudson . . . Alex d'Agapeyeff, immediate past president of the BCS and chairman of Computer Analysts and Programmers was invested with the OBE he was awarded in the New Year Honours List . . . Dataskil, ICL's software and operational service company, reported external revenues of over £1.25 million in 1970/71, estimated to rise to over £2 million this year.

PASCAL
A Design Tool for microcomputer Systems Engineering
An intensive course of lectures, tutorials and workshop sessions.
April 19-23, 1982
BRUNEL UNIVERSITY
Phone:
UXBRIDGE 37188 ext. 738 or 718 for Course Brochure

Short Course on
MICROPROCESSOR SOFTWARE
at the University of Salford 26/27 April, 1982
using Z80-based development systems
Full details of this and other courses from:
Microprocessor Short Courses Unit (CW), Department of Electrical Engineering, University of Salford, Salford M5 4WT. Tel: 061-736 5843, Ext. 248 or 483

Switch on faster
with the No1 DEC Terminals Distributor
Ex stock at the right price: fitted with a plug and ready to go. It makes sense to talk terminals with Rapid Recall.
For years Britain's No. 1 Microcomputer Specialists, now the new force in Terminals.
Rapid Recall for DEC Terminals

Wanted – a paragon of all the DP virtues

WANTED: an ambitious high flyer keen to cut his teeth on the challenging management problems of our computer age. Must be under 40, numerate, eloquent, articulate, dominant in committee, in possession of an honours degree, ten years in the computer industry, proven track record, adept at handling the Press, lots of drive.

Who is there to fit such a description anyway?

Eager to find out, I asked one of my colleagues to suggest a name.

"Um . . . Eureka! Rohb Wilmor," he cried.

Indeed. But for the less able mortal, would it not make a refreshing change to see job ads like: Bags of fun (but not under the eyes) for illiterate imbecile with propensity to day-dream and unpunctuality.

Another point occurs: People with something to sell must adhere to standards laid down by the Advertising Standards Authority. But when you want something, it seems you can ask for anything under the sun, and a good deal that the Sun would never dream of printing.

If you don't believe me, just peruse the columns lo magazines where the lonely advertise for companionship.

Palming with printouts

MORE astrological news from Canada: An ex-elevator mechanic, now a self-taught psychic, decided to exploit the apotheosis of the computer. He also taught himself to program in Basic, and then bought three Apples, four Panasonic screen monitors and bundled the lot in the back of a truck.

Now he tours fairs and sells horoscope printouts for two Canadian dollars, or $3 the pair.

He says he has done nicely, thank you, using what is called a Comp-U-Palm machine scanning palms and analysing humps and lines for clues to the inner being.

"The machines lend an aura of scientific validity to the readings," says the automated psychic.

In the steps of the SAS

MYSTERIOUS goings-on in God's own country. Last December, 12 ICL customer engineers were sent on a training course in the Brecon Beacons.

Details of what went on are sketchy, but rumour has it that it was the course used by the SAS for endurance training. Does this mean that ICL is poised to win the prestigious order for Britain's crack regiment's pension system?

One imagines that considerable damage could be caused as the operators parachute on to the computer room roof, abseil down the walls, and blast their way through the wall to load a tape.

Perhaps the engineers will adopt a modified version of the SAS motto: "Who dares repairs."

Key to new lease of data life

AT this stage in computer development, implementing a new computer system should be plain sailing. Once the various switches, controls and operating instructions have been mastered, all should be plain computing.

But smooth computing seems about as rare as a service engineer after 5pm (4.30 on Fridays), or a software package which fully meets user expectations. Even IBM, an organisation not normally noted for spreading measures of alarm and despondency in computing circles, has drawn up a list of hazards which companies face when getting involved in data processing.

Derek Gauge, of IBM UK, has compiled a list of four critical stages users must go through during implementation. They range from lack of computing management, proliferation of new applications, control of escalating budgets and finally, a move towards micro independence by end users which results in unco-ordinated company data flows.

The IBM solution is to maintain an overall information strategy, both before and during implementation stages.

There is, however, another approach to computing which is increasingly finding favour with users – and not just those in the first-time user category. Turnkey computing operations have become a well-established part of the computer industry, particularly with those changing or supplementing their systems with small configurations, and those wishing to avoid the perils of the IBM list.

Compact computer systems are now reasonably priced, and fully capable of sustaining fairly advanced procedures. First-time users could find themselves involved in creating information databases or planning local area networks or, as often the case, interfacing a stock control system with the warehouse and central accounting procedures. Maintaining an in-house specialist team to initiate, develop and operate the equipment and related software is not a viable proposition.

Bridging this manpower and technology gap would take more than the combined resources and facilities of the 1782 promotion team. Turnkey facility companies have certainly taken on a new lease of data life together with an increased number of customers.

A turnkey operation would seem to offer the best of all computing worlds to the prospective user. On the equipment level; many turnkey companies act as distributors for major brands of computer hardware, such as Digital and Hewlett-Packard, that is readily available, easily serviced and well tried and tested.

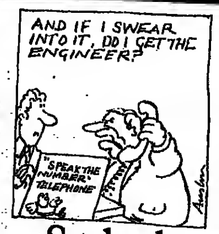
On the software side, the turnkey companies can afford to retain a high quality team of system designers and programmers. Once a new application package has been developed, the cost can be offset by supplying the basic system to several users, the ready-for-use price being highly competitive and cost effective.

With computer personnel becoming increasingly in short and expensive supply, letting the turnkey company take the computing strain certainly makes sense.

For the DPM, however, this is one key he would prefer to be without – unless he joins IBM or sets up his own turnkey company.

Alan Simpson

Testing time with the optician



I WORE my ICL tie with pride for a visit to the optician.

"Ah!" quoth the optician in instant recognition of my chauvinistic attire, "you must be one of those computer fellows."

"Aye," I replied.

"Why, I nearly bought a computer once. For stock control, don't you know."

"Bully for you," I yawningly replied. "I've come to have my eyes looked at," I added impatiently.

"But then something else cropped up," continued my optical friend. "Dust."

"What?"

"Dust. When there's dust on something we know it's been around some time. So there is no need for a computer to tell us how old our stock is."

This was too much for my narrow-minded bigotry. Struggling with my knot, I removed my ICL tie, and had to be restrained from wringing the man's neck with it.

But he had the last word.

As I apologised for losing my temper, he told me: "The mind of a bigot is like the pupil of the eye. The more light is poured on it, the more it contracts."

Scalpel fantasy

THE tedium of everyday data processing can often be relieved by indulgence in idle fantasy. This can be kindled by a suitable prompt from the computer, and I am happy to give you the definitive example, courtesy of one of our leading hospitals.

Bleary-eyed users there switch on a library terminal of a morning, and elicit the prompt "EXECUTE".

Bellowing with the hollow laughter of a person telling someone else's joke for the umpteenth time, the user then fills in the name of the applications program: "Margaret Thatcher."

And to think they paint hospitals blue for her!

Where does it all go?

AT last I learn how a computer package called Ross, developed by Lamsac, the Local Authorities Management Services And Computer Committee, enables savings to be made on rubbish collection. It selects the paper from the rubbish and sells it to Lamsac for recycling and eventual use in its press releases – although I would not wish to criticise the words themselves. Perish the thought!

A recent release telling of Lamsac's penetration of the US refuse collection market proudly boasts: "100% recycled paper."

All I can tell you is that it is good for mopping up ink blots.

Chad

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, March 4, 1982

Go to the Middle East, young man

WHILE some British businessmen cry into their beer over the state of the economy, and blame any corporate failure on the world-wide recession, others have discovered one geographical area where there is not even a word for recession in the local language – the Arabian Gulf.

Although this area of the world is immensely rich, the source of its wealth, oil, is finite. It is well recognised that there is an urgent need to establish a stable industrial and commercial base if current living standards are to be maintained.

Owing to the relatively sparse population, only 20 people per square kilometre, much of the clerical effort involved in setting up businesses in the area has to be imported.

While the countries of the Middle East are in the invidious position of owning much of the planet's oil wealth, they also have the dubious honour of being pawns in the global game of Monopoly being played out by the superpowers.

□ □ □ □

The area is, however, more at risk from within. The entire region is effectively run by foreigners. The routine office and manual work tends to be carried out by imported Asian labour, while Europeans and Americans provide most of the technical expertise for running high technology installations. True stability in the Middle East will not be achieved until its countries are back in the hands of its own people.

One of the hidden trends of computerisation in the Middle East is to replace the bulk of migrant labour with information technology, and governments are actively encouraging the spread of computers to meet this aim. In 1980 over £74 million was spent on imports of computer equipment. The largest share – £26 million – came from the UK.

Unfortunately, for too long the Gulf has been at the mercy of expatriate Europeans and Americans who see the area as an easy touch. The idea has lasted that buyers in the Middle East are naive and will continue to pay vastly inflated salaries to people who in reality are not worth it, and most of whom would have trouble even holding down a demanding job at home.

What the Gulf nations want is a burgeoning local DP sector, both managed and manned by local staff. To help secure that, what is also most definitely wanted is professional help in setting up installations and training the staff to use them effectively.

□ □ □ □

Although some Gulf countries are setting up some form of centralised training facilities, such as the NCC in Abu Dhabi, and the Computer Training Centre in Kuwait, much of the training expertise still needs to be imported.

Some UK firms have already responded to the challenge. Among the more recent is Altergo, which won a £2.5 million deal from Saudia airlines for a flight information system. One of the main reasons for its success was well-established training facilities (in Ireland) for Arab staff. Others are following.

It is not solely a European, or even developed country market, however. Snapping at the heels of Western suppliers are companies like Tata Burroughs, the Indian software arm of Burroughs which markets its packages and skills abroad.

It has already secured work in the US – a real coals-to-Newcastle success – and is handily placed to move into the Middle East. More Indian companies could follow.

While it is unlikely that the Middle East will ever develop an indigenous computer manufacturing industry, the home market is also certain to foster software houses.

In the meantime, there is a space for British firms to become more established. Cliché it may be, but for information technology the call remains: "Go to the Middle East, young man."

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Paul O'Nolan, of Dublin, who wins £5. The gadget that determines what a computer will do is the programme, or "floppy disc" as it is known in the business. This ingenious piece of software asks the questions of the operator and all he or she has to do is answer them.

Sunday Tribune (Ireland)

Law is against public interest

I WOULD like to congratulate NCCD (whoever they may be – are they a division of NCC?) on their very colourful advertisement (Appointments section, CW, February 18). It certainly caught the eye!

What a pity that they based a large part of their argument on a falsehood, and have caused considerable worry to very many people as a result!

Let me state the facts for the record. Those contracting companies who find work through agencies *will not* have 30% of their income deducted at source from April 5, 1982. This was originally a proposal within the 1981 Finance Bill, but was withdrawn after substantial objection from the industry.

The Inland Revenue has now issued a consultative document entitled Taxation of Agency Workers Operating Through Companies, which is being examined by the industry and by accountants. Should these somewhat modified proposals become law, they will take effect from *April 5, 1983* at the earliest.

Many of us in the industry feel that the legislation now proposed is unfair to those companies who, for a host of reasons which I won't go into here, prefer to work through agencies.

For a start, the proposal is against the public interest. The government has acknowledged that new jobs are primarily created by small, young, dynamic companies. Removing 30% of their income (albeit temporarily) will do nothing to encourage such companies, and may well stifle them.

On behalf of one agency, I would like to state that we will willingly accept any challenge that NCCD might offer. We know that we give value for money; time will tell how effective (or ineffective) NCCD will be.

ALAN J. NORRIS
Chairman
Computastaff
London SW1.

Redac software

I READ with interest the article by Kevin Cahill covering the activities of Nokia. As the article reflected, it is an extremely progressive company and has invested well in establishing good technology.

However, I must correct a basic inaccuracy in the article. Reference is made to "the use of Racal-Redac computer-aided design equipment with CALMA software."

There is no CALMA software, or for that matter any other software, used with Redac CAD installations at Nokia. The systems operate with Redac-supplied hardware and software.

Nokia became the first Finnish company to install CAD in 1975 when it implemented our PCB Design System using DEC PDP-15 hardware.

To supplement the new PC manufacturing capability, to which Kevin Cahill referred, Nokia installed three of our MAXI systems. More recently it has installed our low-cost Cadi PCB Designer in some of their divisions outside the Kilo facility.

I believe that Finland, through Nokia, is showing that you certainly should not underestimate a country's capability simply because it is not large. Modern technology is now readily available for all who have the foresight to make the investment.

KENNETH WYATT
Director
Racal-Redac AB,
Stockholm,
Sweden.

Headhunters are quite harmless!

ALAN Williams's jaundiced piece about "headhunters" calls for a reply from one of them, for he and I seem to have been living in different professions instead of – as I understood – the same one.

In the first place, in 10 years as a headhunter, including writing articles, giving talks, etc on executive search, and with a very wide acquaintance in the profession, I have never before met anyone who thought that the term "headhunter" was pejorative.

Like most of the best American slang – pithy, amusing and otherwise harmless – the word has crossed the Atlantic and simply worked its way into our everyday language, so that now the cream of the profession refer to themselves as headhunters entirely interchangeably with "executive search consultants."

If Williams wishes to set himself up as an arbiter of ethics he should not beg the question and steal the answer by means of odious and emotive expressions like "hitmen." I strongly suspect that he has invented the term "roll-over merchants" for the purposes of his article.

Certainly I have never heard of it, though the activity he associates with the term (moving the same recruit from one place to another at a fee each time) is specifically forbidden in the Employment Agencies Act, 1973. Williams gives no sign of knowing this.

Incidentally, the Act makes no distinction between re-approaching a recruit one has just placed and re-approaching someone whom one placed 20 years ago, and this is not the only way in which the Act illustrates the futility and unrealism of trying to legislate moral behaviour.

In my experience, which is not limited to searching in the computer industry, headhunting in this country is carried on, generally speaking, as ethically as banking, medicine, the law or what-have-you, and I can only suppose that Williams was trying to be controversial, or even provocative. If so, he succeeded.

BERNARD BABOULENE
Managing director
BLB Consultants
London SW20.

Printer is available

PETE Wilson and others (Letters, CW, February 18) will be pleased to learn that a 160-column printer is available, from Al Peripherals. So too is a microprocessor controlled interface to ICL mainframes and full support for the total package.

MIKE MANSFIELD
Al Peripherals
Windsor, Berks.

The Editor welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication. Letters may be cut.

Copyright legislation is still urgently needed

IN an article on software protection (CW, December 3, 1981) I suggested that the Exxon case decided by the Court of Appeal in June last year was a threat to the existence of copyright in computer programs.

Bryan Niblett (CW, January 28) agrees with my view on the urgency of the need for legislation but he dismisses my suggestion that the Exxon case is a threat. Unfortunately the reasons that he advances are gravely flawed.

The Court of Appeal decided that the word "Exxon" was not an original literary work so as to be protected by copyright. It did so because it recognised that, although it was an original work, it was not "literary". The Court relied on a definition given in an old case that defined a literary work as one "intended to afford either information and instruction, or pleasure, in the form of literary enjoyment."

Applying this definition to computer programs, there is an obvious risk that they will not be treated as literary works, because they are not intended to afford either information and instruction or pleasure in the form of literary enjoyment.

Niblett argue that cases decided under old Acts (in this case, the 1842 Copyright Act) cannot be applied to modern circumstances, and he contends that the Copyright Act 1956, which is now in force, has greatly extended the range of things which will be treated as literary works.

What Niblett seems to have overlooked is that his argument is exactly the one put forward by Exxon in the Court of Appeal: but they *lost*. The Court of Appeal expressly rejected this argument, and said that the old test applied exactly to the 1956 Copyright Act, as it had to previous Acts, and was as appropriate today as it ever had been. This rather sweeps away Niblett's main point.

His other point is that the Exxon case decided nothing more than that a single word did not obtain protection, and that this would not affect programs consisting of more than a single word.

However, the effect of a decision of the Court of Appeal is not merely that the same set of facts would be decided in the same way in a later case: what is applied in later cases is the reason for the decision, the principle it lays down. The reason for the decision in the Exxon case was that a single word was not a literary work because it failed the information/instruction test.

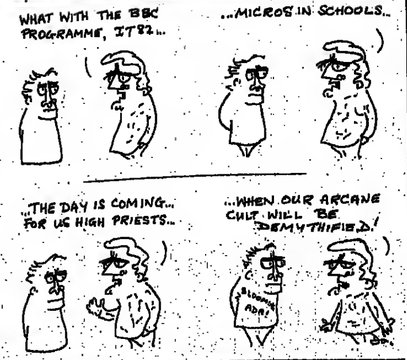
It is that principle which survives the case, and has to be applied to new cases as they arise.

Bryan Niblett draws some comfort from the old cases which establish that copyright subsists in a list of invented words devised for use as telegraphic codes. Those lists were invented to afford information and instruction, and were intended to guide the workings of the human mind, not the operations of an electronic device.

I share Bryan Niblett's hope that copyright in computer programs will be found to survive despite the Exxon case, and I hope that readers will join Bryan Niblett and me in exerting what pressure we together can to bring about early legislation.

N. D. F. BOHM
Solicitor

Liveware File by Don



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PROGRAMMERS PAGE

CAFS — a pace-making product that's storing up marketing headaches

by Philip Hunter

ANY idea that products which put end users in direct contact with the computer make programmers redundant, can be despatched by the experience of ICL with its CAFS controller.

In simple terms, CAFS is a hardware solution to a software problem; but to many of its development team it must still seem more of a problem than a solution.

The ICL Content Addressable File Store enables selected data to be retrieved from a base for central processing at the speed at which it comes off the disc. This allows enquiries to be performed much faster than with conventional methods which combine software and raw processing power.

But CAFS has limited applications, and is another example of a pace-making UK product creating marketing headaches.

Although the existing version on the market is widely recognised as a fine product (even by IBM), it is at present limited to batch query applications, and is of little use in online systems.

Within its field, however, it is very flexible and provides the ability to hunt out groups of data under a wide range of selection criteria.

Let's begin the story with ICL's mainstream data management method, IDMS — Interactive Database Management System. This allows the construction of a database through which there are navigational paths for those activities which are predictable.

It consists of many record types connected by relationships called sets. These sets in turn can be owner or member sets, or both at once.

Programmers writing applications with IDMS do so using special Cobol verbs such as FIND and OBTAIN. These are compiled by a preprocessor to yield typically between two and four lines of executable Cobol code. The preprocessor also copies in record layouts and descriptions at run time.

The construction of an IDMS database requires careful thought in order to build the most useful navigation paths. The navigation also poses problems at run time for programmers writing applications on such a database.

Entries to the database are expensive, and it is an experienced programmer who keeps these down to a minimum by making the most of each access.

The whole database is known as a schema, and a predefined part of the base is a subschema.

Where the applications of a database can be predicted, and there is little prospect of it having to be changed, IDMS bases are efficient.

CARMICHAEL . . . . "An example of a splendid UK invention not taking off as it should."

But once built, they cannot easily be changed, and are inefficient in handling unexpected enquiries.

Enter CAFS — a simple approach to the storage of data, says ICL. Fields of data elements, each with an identifier, are combined into records, which in turn are organised serially in cells. In fact the whole CAFS process is based on simple — old-fashioned if you like — sequential organisation. This is dictated by the hardware configuration of the CAFS processor, which simply calls off the requested data as it comes from the disc. It picks out the desired fields from records satisfying selection criteria.

Up to 16 selection criteria are allowed which may be combined with ANDs and ORs in boolean expressions to satisfy relatively complex requirements in a single pass.

While the selection mechanism searches within a record for a field which matches the criteria, a parallel mechanism extracts from the record those fields which have been requested for entry to the mainframe. At this point it does not know whether the record will finally be selected.

> Reaction of technical people is bad, but since the facilities can't be had otherwise, the criticism is somewhat irrelevant

After a record has been scanned, each key of the selection mechanism is examined and a key bit is set if there is a success. If all the keys are satisfied, the record is christened a hit.

CAFS 800 is the version which has been on the market for several years and it operates on the larger of ICL's current processor range in the DME environment.

So far seven have been sold — "an example of a splendid UK invention not taking off as it should," says its marketing manager Hamish Carmichael.

So why has it not taken off?

It is very fast, with average throughput of data from disc to scanning mechanism typically two Mbytes per second. People who use it love it for what it is good at, which is extracting information from groups of records with identical formats.

But for potential purchasers there are three snags:

1. It is expensive — a CAFS controller costs £175,000, and other cheaper query systems are available.

2. Its field of application is limited to sequential and relational databases.

3. At present it uses EDS 60 discs, which are small and old-fashioned by today's standards.

These points I raised with Carmichael, who is more than a mere marketing manager, having been involved with the development of CAFS and written several technical papers about it.

Of the third snag, he answers: "Reaction of technical people is bad, but since the facilities can't be had otherwise, the criticism is somewhat irrelevant."

On price, Carmichael claims that the large initial investment would be recouped by manpower savings. "Each implementation of CAFS will save between four and six man years."

But he adds, with justice on his side, that other cheaper query systems are but carthorses by comparison.

CAFS' biggest failing is that it cannot be used with ICL's conventional IDMS databases. Carmichael attempts to answer this criticism by referring to a paper he has written about a study whose aim was to reconcile the CAFS and the IDMS approach.

The idea was to establish an IDMS database on CAFS disc and then to confirm that it was possible to access the base both in the CAFS mode for enquiry and in IDMS mode for following connections between related record.

There is no way that CAFS can read the data in IDMS form. So it was necessary somehow to disguise the IDMS data in a form readable by CAFS. This was achieved by converting IDMS records into CAFS records by picking out groups of fields which would fit the CAFS format and inserting appropriate headers and trailers.

The experiment was a partial success in that access by both modes was shown to be possible with reasonable speed. But only very simple data was used, and even so some ambiguity was observed when an attempt was made in CAFS mode to obtain data stored in more than one type of record in the original IDMS base before conversion. With more complicated data structures, this ambiguity could become chaos.

The strength of IDMS bases lies in the ability to link records of different kinds to suit the required applications. Surely it must be possible to exploit this in CAFS for faster retrieval of information. At the same time, CAFS indexing techniques could be applied to IDMS data.

Married to his work?

ETHNIC jokes have long been a source of amusement in every nation. They are based on the fact that people next door are always more stupid, and hence the English tell jokes about the Irish, the Dutch, the Belgians — and computer programmers about operators.

One tale, which I swear is true, concerns an operator who married a programmer. He was consistently nagged to take night classes in computer science in the hope of moving to her side of the computer room door.

He tried, but failed his exams, and as a result was soon once more a single man. He is still an operator today.

I suggested that he might have gone far had he succeeded in his exams.

"Stuff and nonsense," [illegible] the reply. "I'd have the worst of both worlds — a programmer and married to a programmer."

A trifle harsh, I feel, but if such rhetoric enables operators and programmers to live together in superficial harmony, so be it.

PUZZLER

JUST added another "true" alphametic to my collection, this time totalling 56. Your job is to identify the ten digits involved. See page 54 for solution.

```
S IXTE EN
S IXTE EN
S IXTE EN
      TWO
      TWO
      TWO+
---------
F IFTYS IX
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OP SPOT

Tale of the bike with a computer in the tail . . . .

by Andrew Thomas

UNTIL a few days ago, the most fun I'd had while operating a computer was when I managed to get most of the treasure out of the dragon's lair during an all-night Adventure session.

That was until I sat in my local one balmy February evening. The sylvan quiet was interrupted by a soft burbling noise outside the window. Peering out, I saw a young man parking an obviously new and not impressive motor-cycle.

As he walked away from it, trying very hard (and succeeding admirably) to appear nonchalant, I identified the machine as a Honda CX500 Turbo.

Having read in the motor-cycle Press of this machine, I was aware that it boasted computer control of all engine functions.

> When the power came in, it pulled like a train — and kept on pulling

This seemed an opportunity too good to miss. I arrived at the bar at precisely the same moment as the newcomer.

"Nice bike, is it yours?" I asked. He needed no further prompting, and we launched into an enthusiastic discussion on the merits, or otherwise, of various high performance motor-cycles.

The CX500 has a V-twin engine which, because of its uneven firing pattern, is probably the most difficult configuration to turbocharge effectively. What is needed is a sophisticated control system — and what more sophisticated control system could you have than a microcomputer housed in the bike's tail?

The computer is responsible for supplying each cylinder with exactly the right amount of fuel under any circumstances. Sensors measure the throttle opening, atmospheric pressure and temperature, the engine water temperature, and the individual cylinder intake pressures. The analogue readings from these sensors are converted to digital information, and fed to the processor.

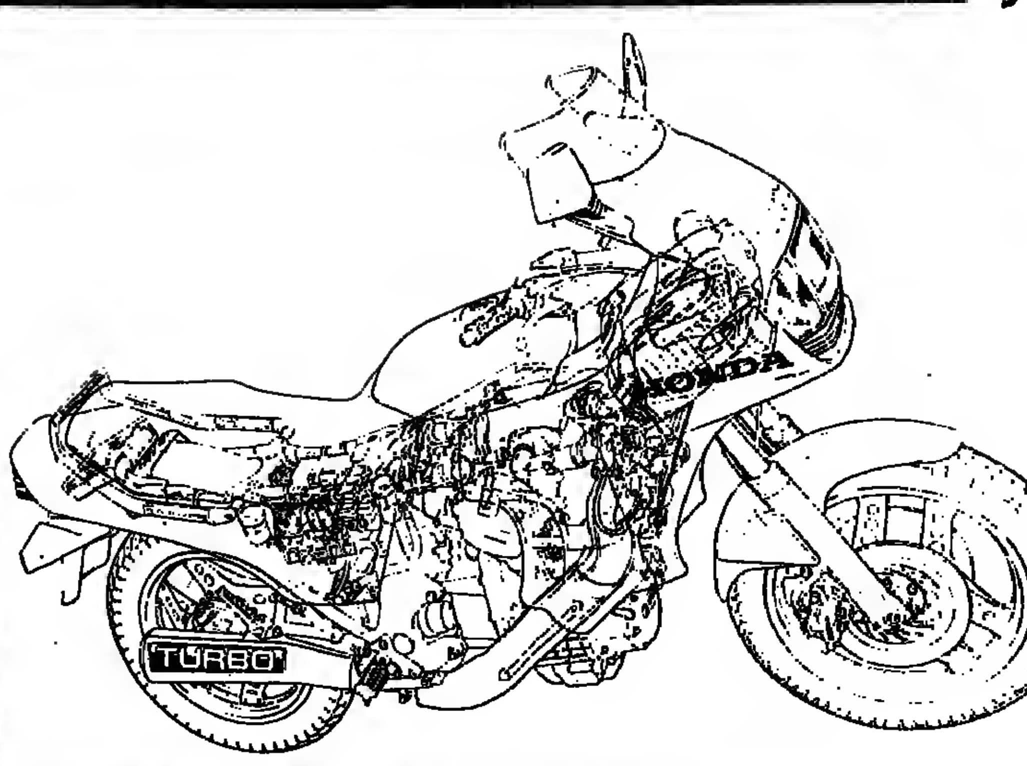
The computer, built in Japan by Nippon Denso, which also supplies electronics for turbocharged cars, decides on the correct amount of fuel to be supplied to the cylinders by the solenoid-controlled injectors. Because the intake and firing events are unevenly placed within the timing cycle, each injector is triggered by an electronic pick-up sited on the end of the camshaft.

If one of the sensors should fail, the computer resorts to default values for the affected parameter, which enables the bike to be ridden with reduced performance until the defective component can be replaced.

If the turbocharger waste gate, the device which limits boost pressure, fails, the computer progressively weakens the mixture to reduce the amount of forced induction, thus avoiding the risk of a disastrous (and expensive) mechanical failure.

Apart from the normal running curve, which the computer is programmed to follow during most running, cold starts are facilitated by a second curve. No choke is fitted; and when the engine is cold, an air valve opens, allowing extra air to bypass the throttle valves. The computer allows extra fuel to be injected and when the starter motor is actually turning, double the normal amount of fuel is supplied.

As the engine warms up, so the air valve is closed by an electrically-heated bi-metallic strip. If the engine is already warm, the strip is kept shut by engine heat. On cold days, or at high altitudes, the air temperatures and pressure sensors supply the computer with enough information to adjust fuel metering accordingly.



A computer that travels at 120 mph — in the tail of a turbocharged motor-cycle.

One of the main problems presented by turbocharged engines is that of throttle lag. If the throttle is opened quickly, full turbo boost and hence maximum acceleration, is not available until the blades of the turbocharger are spinning fast enough to force the mixture into the cylinders.

The turbo fitted to the CX500 is extremely compact, and its moving parts have a correspondingly low mass and inertia which reduces this effect to some degree. In order to improve performance in this area, the computer is programmed to ignore all other constraints should the throttle be opened faster than at the normal rate, and to inject fuel immediately.

Full acceleration is still not available until the turbo is spinning at its optimum speed.

If the main computer should develop a fault, it is unlikely that it will immobilise the bike completely. The processor has enough resilience to enable the vehicle to be driven to a dealer for attention. Should there be a hard fault in the computer itself, it is simply replaced with another unit.

Meanwhile, back at the pub, the proud owner of the machine made an exceedingly generous, not to say foolhardy offer.

"Would you like to try it?"

I was sitting on the bike before his mouth was closed. The performance of the CX500 Turbo is theoretically similar to my own Honda CB900, so a comparison would be relatively easy.

On the short run I made, the power delivery was the main difference.

The turbo-engined bike seemed to lack the initial enthusiasm for acceleration of my faithful old steed, but when the power came in, it pulled like a train — and kept on pulling.

At £3,350, it is by no means a cheap means of transport, but it does offer the chance to operate a computer — and thoroughly enjoy the experience.

Doubling the workload

BUMPED into a pal from International Mbwlofiqta the other day, and was told of the problems they'd been having at the East Geven data centre with a new communications processor.

Apparently the device has refused to talk to the rest of the comms equipment since its delivery late last year. A software specialist has been working full-time to try to rectify the problem, and the errant device has so far managed to drive the grand total of one VDU.

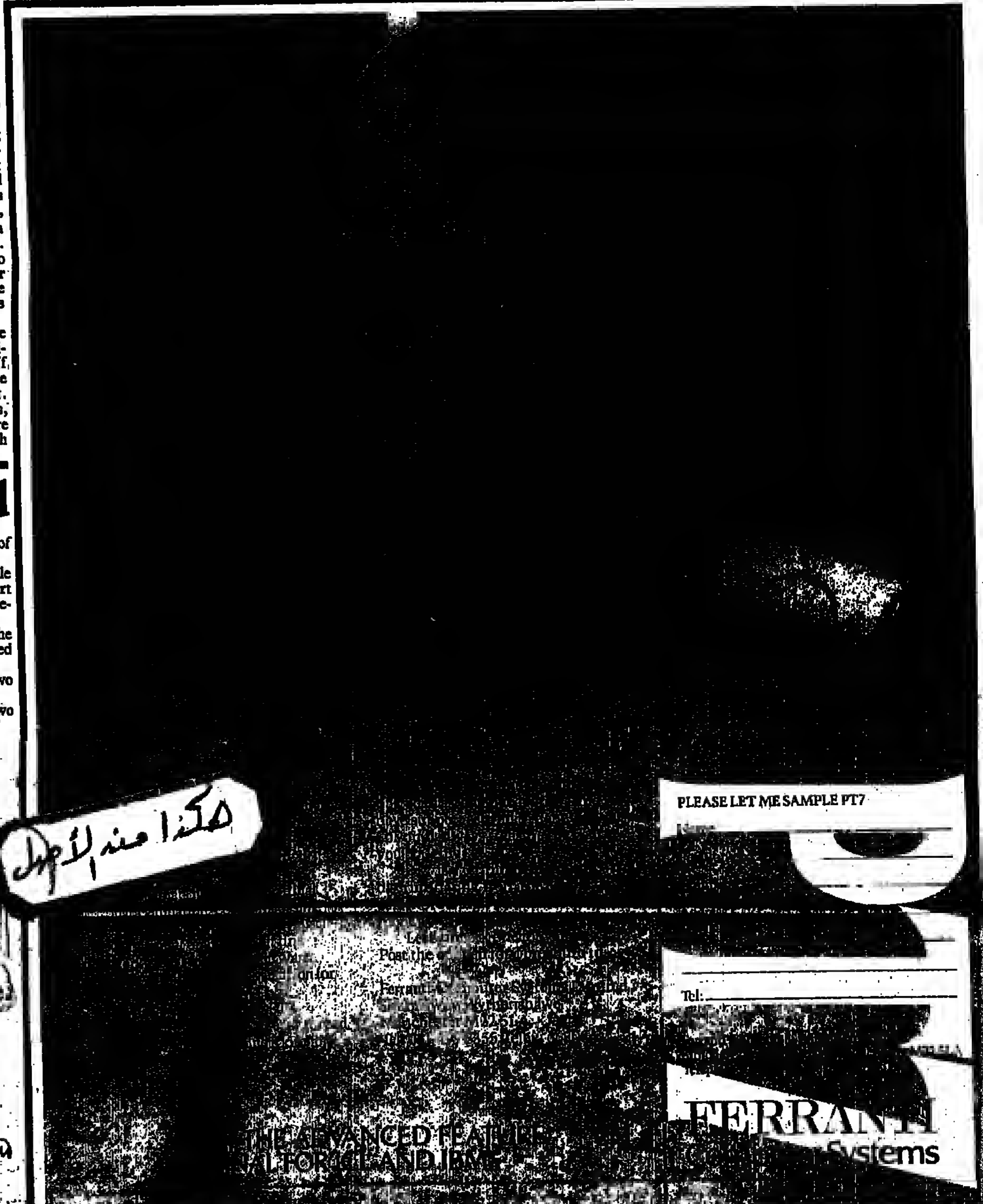
On the day I met my erstwhile workmate, the technical support team were confident that more devices could be attached.

"We're going to double the workload today," he announced proudly.

"You're going to connect two videos?", I asked incredulously.

"No, we're going to sit two operators at the one that works."

"And this is Ronnie — he boots the system."



PEOPLE

Hands-on experience offer to teenagers

TWO firms are getting into the spirit of IT Year by giving youngsters practical computing experience.

Children between the ages of 12 and 14 in and around Blackpool are to learn the basics of programming personal computers on a 13-week course, consisting of two hours one evening a week, courtesy of Guardian Royal Assurance. The course caters for 20 children at a time and is centred around Sinclair ZX81 machines.

Management consultant Inbucon is running three days of workshops in Birmingham, where 150 West Midlands youngsters will take part in a one-day intensive course on microcomputer technology.

Inbucon normally charges about £100 a day for its tuition, but will be donating the workshops free of charge. All other costs, such as lunches, are being met by the Midlands region National Girobank.

Dan Remenyi, Inbucon Management Centre director, said the idea was to give first-time hands-on microcomputer experience to as many teenagers as possible.

Seymour Hosking is to head CMG Computer Management Group's Edinburgh office. He has previously worked with IBM in Canada, International Air Transport Association in Geneva, the Scottish Amicable Life Assurance Society and Arthur Young Management Services. He joined CMG's Glasgow office as a senior consultant a year ago.

Sales and marketing manager for Dupont Computer Service is Alan Hadley, who has been with the company since its formation 10 years ago. For the last two years Hadley has been systems manager. In his new post he will assume responsibility for expansion of the company's computer bureau operation and sales of microcomputer systems.

Bill Osbaldeston has crossed the Atlantic to take up his new post as vice-president at VLI Group's recently opened New York office. He was previously UK general manager of Advanced Systems. He will take responsibility for sales and marketing of VLI's systems and programming consultancy services on the Eastern seaboard of the US.

New firm launches award

LEEDS has a new management services company offering computer systems, financial, direct mail, marketing and public relations services to small and medium-sized businesses.

Champion Management Services was formed by its 28-year-old managing director Paul Blackburn, a Cambridge graduate. The company is launching an award scheme with a £500 prize, to the Yorkshire firm which makes the best use of its computer system.

The winner will also receive the Champion Computer User Trophy. Sponsored by Altas Hydraulic Loaders, the scheme costs £10 to enter and is open until June 30. Entry forms from Champion Management Services, 32 Sovereign Street, Leeds LS1 4BJ.

Three join Peachtree

THE collapse of BMG Microsystems meant redundancy for Michael Bennett, Johathon Osborne and Mark Hodgson. But all have now found employment with software supplier Peachtree International.

Bennett joins the company's software team. He was previously in mechanical engineering, followed by computer operation, programming and analysis.

Osborne and Hodgson have been appointed programmers at Peachtree. After gaining a BCS in computer science at Portsmouth Polytechnic, Osborne joined IBM and later BMG as a programmer. Hodgson is a relative newcomer to the industry. His first computing job was with BMG where he worked from November 1980.

Executives on the move

JOHN ROBINSON has been appointed to the board of Leasco as sales and marketing director. He was formerly sales manager.

Roy Martin, systems operation manager and **David Smith**, sales and marketing manager, have been elected to the Press Computer Systems board. Martin has been with Press since 1974 and Smith joined the Wolverhampton-based company last year.

Director of sales for Eurolink Computer Service is **David Jarvis**, former director of sales for Europe with American Express.

Chris Swindon, previously marketing manager for Kings Town Photocodes, has been promoted to sales and marketing director.

■ **Tony Atkinson** and **Tony Seculer** have joined Rediffusion's Crawley headquarters. Atkinson, previously head of word processing and reprographics at Arthur Andersen, joins the company as a project analyst. Seculer, who was with ICL for 16 years, latterly as a senior consultant, has been appointed senior verification analyst, product development.

■ **Barry Ward** has joined Base Ten Systems as Northern sales engineer for industrial systems. He joins the company from Fluke, where he sold test and measurement equipment in the North and Midlands.

■ **John Clarke** has joined Keen Computers as sales director. He joins from NEC, where he was responsible for the EDP division throughout Europe.

■ **David Smith**, group commercial manager of Gordon and Gotch has been appointed associate director of the company. He joined Gotch in 1976. With **Bernard Higginson** he becomes a director of the group's computer supplies subsidiary, Gotch Continuous. Higginson has been with Gotch Continuous since 1979 as a senior sales executive, and is now sales director of the company.

■ **Bob Gray** has joined the Eastern regional office of Benson Electronics as a sales executive. He was previously UK sales manager with MMG Associates.

■ **Peter Feltham**, formerly division manager for the professional services division at Cincom, has joined CACI International's offices, reporting to London. Joining the company as a consultant is **Jack Lowe**. He was formerly assistant manager for Access Credit Cards.

Budge Tozer

Scottish office

F INTERNATIONAL has opened a Scottish sales office, based in Edinburgh. **Ann Budge**, who is the company's area manager for Scotland, has set up office in Melville Street, in the heart of the city. **Jane Tozer**, a founder member of the IBM Showcase team which in five years presented IBM products to over 12,000 people, has joined F International as business development manager. This is a new post, created by the company to help it diversify into new fields of computing services.

■ **George Goble** has joined United Computing as a consultant for the London region, specialising in personnel systems. He was previously personnel services manager at Lucas CAV, where he worked for 11 years.

■ **Frank Swift** has joined KPG Computer Support Services as recruitment consultant. He was previously applications support manager with Grand Metropolitan Bureau Services.

■ **John Morrison** has been appointed UK services manager at Burndept Electronics. He was previously service manager with Barlow Rand in South Africa and before that was with General Electric of America, also in South Africa.

■ **Alex Smith**, former sales engineer for TDS products in the North-west, West Midlands and Scotland, has been appointed international sales manager of TDS in Blackburn, Lancs.

■ **Tim Rees** has joined RTZ Computer Services as training consultant for financial software packages Fascia and GL Plus. He was previously chief accountant at Rockware Plastics.

■ **Hal Chenhall** has been appointed UK sales manager at Datron Electronics. He joined the company as a sales engineer, but left for a short spell to join Racal-Milgo.

■ **Colin Wier** has been appointed sales executive at the Glasgow office of Computer Technology, CTL. He was formerly with Burroughs, where he sold small and medium-sized commercial systems in East Scotland.

■ **Michael Newstead** is to be personnel manager at Compeda. He was previously a freelance personnel consultant.

■ **Jim Wills** has been appointed director of European operations at Hazletine. He also assumes direct control in the UK as general manager of Hazletine Ltd, based in Middlesex.

■ **Steven Purchase** has been promoted to technical director at Gresham Computer Services.

■ **Dr Terry Chamberlain** has been appointed senior designer for sonar systems at Ferranti's Cheadle Heath division. He was formerly manager of new systems at Burroughs in Glasgow.

Promotion

FOLLOWING the retirement of data preparation manager Sally Catherall, Gordon and Gotch Computer Group has appointed **Brenda Howes** as her replacement. **Sandra Goddard** will assist as data prep supervisor. Howes joined the group in 1974, and Goddard joined in 1976.

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CENTRAL COMPUTER AND TELECOMMUNICATIONS AGENCY
MICROCOMPUTERS FOR CENTRAL GOVERNMENT DEPARTMENTS
It is proposed to select a small number of representative microcomputer systems (in three categories) which will form the standard range of general purpose small systems for use in Central Government Departments.
Contracts for the standard systems will be awarded to the successful competitors for requirements which arise in government Departments for at least the following twelve months.
It is proposed to acquire some of the standard systems for use in the Microcomputer Branch of the CCTA as the initial requirement under these contracts.
Application for copies of the Operational Requirements should be sent to the following address quoting reference CP 6/4.
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(PROC 3A/1)
GILDENGATE HOUSE, UPPER GREEN LANE
NORWICH NR3 1DW
TEL: 0603 60181, EXT. 265. TELEX 975021

CONFERENCES

■ A HALF-DAY seminar for chief executives of computing services companies will assess trends in manpower requirements and the need for further development of training requirements. Organised by the Computing Services Industry Training Council, Cosit, it will be held on March 10 at the Roof Restaurant in the London Hilton Hotel. Fee is £45. Details from Cosit, Fifth floor, Hanover House, 73/74 High Holborn, London WC1 6LB. Tel: 01-242 5049.

■ THE Hilton International Hotel in Park Lane, London, is the venue for the second Invitational Computer Conference (ICC), on March 11. It is an OEM conference and exhibition, aimed at the quantity buyer – OEMs, systems houses and large end users. Starting at 9 am, there will be a series of technical product seminars covering Winchester disc technology and back-up, raster scan graphics and thin-film technology in high-density disc drives. The afternoon will be taken up with a product display. Attendance is by invitation only, obtainable from Tom Lewis at Text 100, or from the exhibitors, free of charge. Lewis can be contacted on 01-994 6477.

■ A STATE of the art conference on data analysis methodologies and database design has been organised by the BCS Database Specialist Group. It will be held at the Dartford Campus of Thames Polytechnic (co-organiser) in London on April 14-15. Day one will feature five of the more popular data analysis methodologies in use today, with speakers from ICL, LMBS, IBM, BIS and CACI. The second day will feature the experience of users of such methodologies and its effect on data analysis and database design within their organisations. Fee to BCS members is £125, and to BCS students (numbers are limited), £110. Non-members pay £150. Details from Geoff Baker on 01-242 1234, ext 2425.

■ THE Computer Education Group, affiliated to the BCS, is to hold its next conference at Nottingham University between April 15 and 17. Called Computers in the Classroom 82, the emphasis will mainly be on work at secondary school level. Discussions will include the effect of the Microelectronics Education Programme on the classroom, information service for schools computing, setting up a microcomputer resource in a school, and the BBC micros series. The fee, £40, includes two nights' accommodation and meals. Applications should be received by March 12 and made by post only to Computer Education Group Treasurer, North Staffordshire Polytechnic, Computer Centre, Blackheath Lane, Stafford.

DIARY

MARCH 9

Industrial revolution, Japanese style. IDPM West London to Oxford branch. Speaker from the Japanese Information Centre. Bull Hotel, Gerrards Cross. 7.30.

Practical networking. IDPM Scottish branch. Edinburgh University, Students Association, 60 The Pleasance. 7.30.

Seminar on data storage and retrieval. BCS Microform Group. National Computing Centre, Manchester. 1.45. Details from Chris Marles on 01-434 1031.

Short papers evening. BCS North Staffordshire branch. Physics Lecture Theatre, University of Keele. 8.00.

MARCH 10

What's in the BCS for us? by Steve Shirley of F International. BCS Teesside and District branch. Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland. 7.00.

BBC computer literacy project. BCS Wolverhampton branch. The Polytechnic, Wolverhampton. 7.00.

MARCH 15

North Atlantic air traffic control. BCS Glasgow branch. The Music Room, Staff Club, University of Strathclyde, John Street, Glasgow. 7.00.

MARCH 16

Word processing and information retrieval. BCS Word Processing/Information Retrieval and Office Automation Groups. Details from Steve Pollitt on (0484) 22288 ext 2248.

MARCH 17

Auditor's view of microprocessors. Joint meeting of BCS Birmingham branch and Institute of Internal Auditors. West Midlands County Hall, City Centre, Birmingham. 6.30.

Meeting of the Committee for the Disabled. BCS. BCS HQ, Mansfield Street, London. 5.00.

Systems X. BCS Edinburgh branch. Mountbatten Building, Heriot-Watt University, Grassmarket, Edinburgh. 6.00.

Computer mail in the automated office. IEE. IEE, Savoy Place, 2 Savoy Hill, London. Details in 01-240 1871.

User interface techniques. BCS Kingston branch. Kingston Polytechnic, Penrhyn Road, Kingston-upon-Thames, Surrey. 7.30.

Privacy. BCS Manchester branch. Manchester Business School, Booth Street West, Manchester. 6.45.

Pascal: Son of Algol, Mother of Ada. BCS Preston and District branch. Saxon Motel, Blackburn. 7.30.

BOOKS—1

Supernatural capabilities of computers

The Kingdom of Sand: Essays to Salute a World in Process of Being Born. William Gosling. Council for Educational Technology. £4.50.

BOOKS concerned with the impact of computers on society are ten a penny. Such tomes usually decline into a tirade on police states and massive unemployment. Any technical detail is either superficial or incorrect, and they take an extremely narrow and short-sighted view of future change.

The discovery of a book which is objective, accurate, thought-provoking, and extremely well written is, therefore, something to be welcomed.

This collection of five essays was originally prepared for such diverse audiences as the graduate intake at Plessey and the nuns of La Sainte Union Convent at Bath. In the space of 98 pages, it covers such diverse topics as energy crises, the breakdown of law and order, communications, life cycles of various technologies, ecological pressure groups and religious education.

There is a series of fascinating charts depicting, for example, the "sailing ship effect", whereby an old product, having reached maturity, ceases developing until threatened by a new technology. This is illustrated by the advances made in the last generations of steam engines, sailing ships, and thermionic valves.

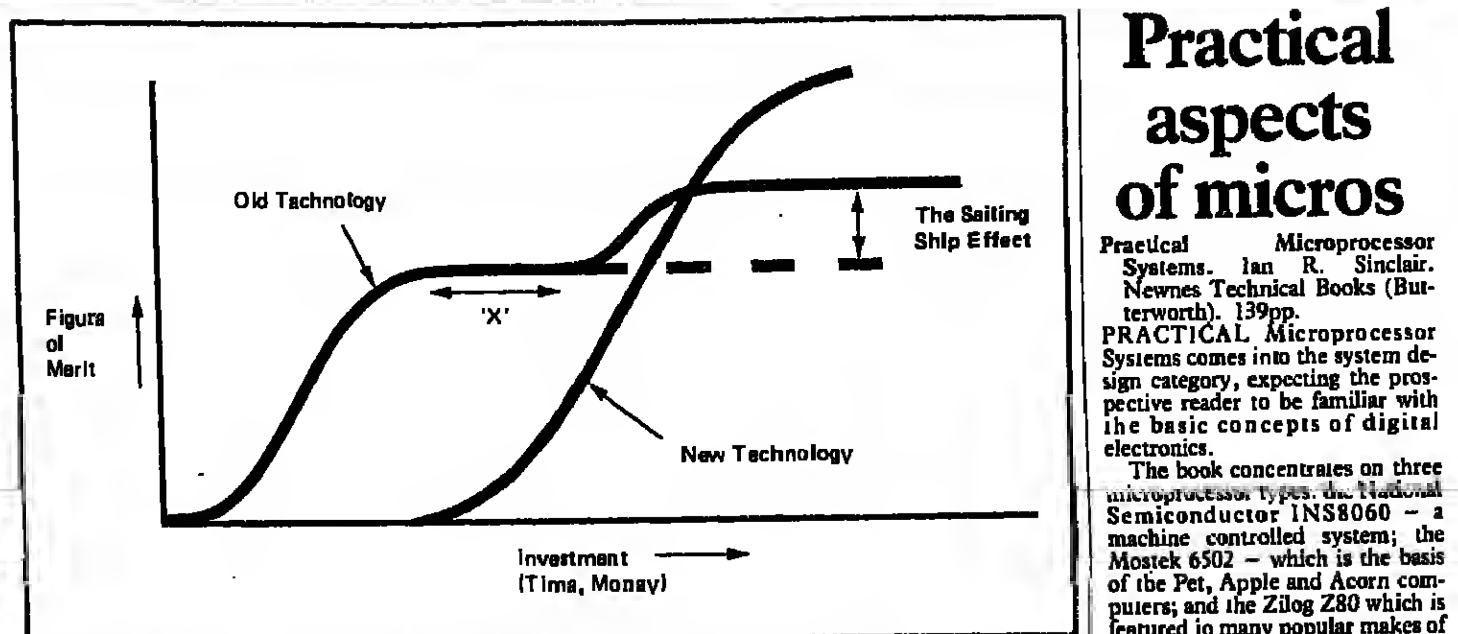
One could dine out for a considerable period of time on the wealth of fascinating revelations contained in the book. Did you know that the number of scientific journals published throughout the world has doubled every 15 years since 1665? Or that the number of qualified engineers and scientists has grown exponentially, but with shorter doubling time – 10 years?

The risks involved in carrying this kind of statistical projection too far are illustrated by the ability to predict that, by the year 2100, the population of the United States would be 1,000,000,000, every one of whom would be a scientist or engineer, they would all live in California, work for the US government, and be suffering from some unmentionable disease.

The final essay enters the realms of the supernatural – if a person could be represented as a code and stored in a computer, could he or she be dumped to magnetic tape, stored for thousands of years, and then be reloaded into another computer without being aware of any interruption in their lives?

There are literally dozens of equally thought-provoking ideas in this book. Recommended reading.

Andrew Thomas



The Sailing Ship Effect. In Region "X" the old technology stabilises, but grows again when challenged by the new.

Practical aspects of micros

Practical Microprocessor Systems. Ian R. Sinclair. Newnes Technical Books (Butterworth). 139pp.

PRACTICAL Microprocessor Systems comes into the system design category, expecting the prospective reader to be familiar with the basic concepts of digital electronics.

The book concentrates on three microprocessor types: the National Semiconductor INS8060 – a machine controlled system; the Mostek 6502 – which is the basis of the Pet, Apple and Acorn computers; and the Zilog Z80 which is featured in many popular makes of microcomputers.

The intimate relationship between hardware, software, and firmware or monitor programs is made clear.

For the hobbyist, student or technician seeking guidance on the practical aspects of microprocessor systems, this book provides a worthwhile insight into the micro design world.

Alan Simpson

Author's aim 'doomed from the start'

Decision Tables and Computer Programming. R. Welland. Heyden and Son Ltd, London.

MOST discussion of decision tables has centred around their use as a tool in systems analysis and design. The author states that he wrote this text with the intention of providing an introduction to decision tables for scientists and engineers.

At present there are virtually no applications of decision tables in these areas, and the author's aim is, I feel, doomed from the start.

It is hard enough trying to persuade this book's potential audience that a one-week course in Fortran will not give them sufficient expertise to last them for the rest of their computing careers. Since they see computers strictly as tools, they want their interaction with the machine to be as simple, undemanding and painless as possible. The presentation of decision tables is far from undemanding in this text.

The first part of the book deals with the basic theory of decision tables and is clear and well-presented even if the diagrams are not very well-produced. The author's claims for the superior merits of decision tables over other techniques for expressing algorithms are not substantiated anywhere in the text (and I suspect may not be substantiable).

The second part of the book discusses the automated processing of decision tables to produce programs. This may be of interest to computer scientists but is long, detailed and fairly complex. In places the text reads like a PhD thesis. In Chapter 6 interpretative approaches to decision tables are covered.

The final part of the book discusses applications very briefly. These include Filetab, FTL6 and process control applications. For a book which is intended to encourage non-computer scientists to use the technique, the applications which could possibly motivate this are left far too late in the text.

In conclusion, while this book has some value to computer scientists, the ordinary scientist or engineer would find it extremely hard going in places. The original literature is heavily cited and the discussion is detailed, exhaustive, and in places exhausting. It could not be recommended to computer users outside the computer science community.

John Cookson
Senior computing officer with Edinburgh Regional Computing Centre

More to programming than mere coding

Advanced Programming and Problem Solving with Pascal. G. M. Schneider and S. C. Bruell. John Wiley and Sons Inc. 506 pp. £17.75 (hardcover) £7.35 (paperback).

THIS book is an undergraduate text in programming for those who have already used a high-level language. Its scope is ambitious, as evidenced by the titles of its five parts – The Pascal Language, Programming Style and Expression, Program Design, Data Structures and Program Implementation Concerns.

Quite rightly, the authors' chief concern is to convey that there is much more to good programming than mere coding, and that programming style, documentation, testing and maintenance are all worthy of serious and detailed consideration.

It is especially valuable to stress the importance of these topics in a teaching environment, where programming habits are being formed largely in the production of "student exercises" generally too small for the real difficulties of software production to become apparent.

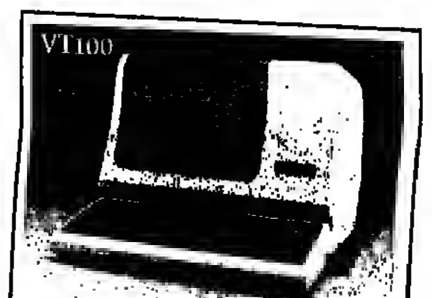
The coverage of these subjects is excellent, but unfortunately documentation is only treated at the very end of the book. A useful case study does give a feel for the complexity of detail in a large project.

This is a fine introduction to good programming practice and the difficulties encountered in large software projects, and any teacher of programming could learn from it.

One minor complaint is that the inclusion in the main text (rather than an appendix) of a summary of Pascal, and the ambitious section on data structures, both compromise the clarity of the book's important central theme.

Peter Wallis
University of Bath

Digital has created a family of terminals based on the idea that nothing works like a VT100.



If you believe that nothing is quite as good as the VT100 in terms of power, performance and reliability, we have some good news.
We've taken all that you admire and created a new family of terminals. The VT100 family – with a variety of performance features at a variety of prices. And quality service – for end users and OEM's.

Affordable Business Graphics. The VT125 Graphics Option
If you already have a VT100, the VT125 Graphics Option offers the first really affordable graphics terminal for business people.
With a unique new graphics instruction set called ReGIS, you can instantly turn numbers into easily understandable pie diagrams, charts, bar graphs and curves. With simple but powerful commands and minimal demand on your CPU.

Enhanced text writing is also available to compliment the graphics. And a colour monitor output is standard.

A Personal Computing Option. The VT18X
Turn your VT100 into your own desk-top, personal office computer.
The VT18X uses the widely acknowledged CP/M* operating system for which numerous application packages are available and new programs are constantly being brought out in a variety of high level languages.
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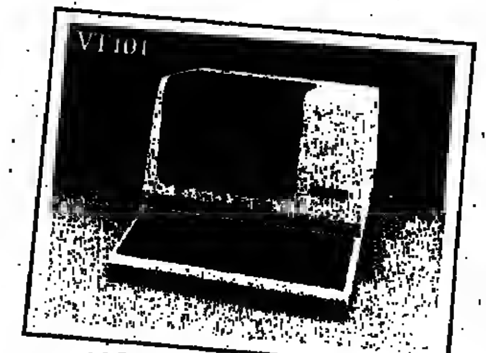
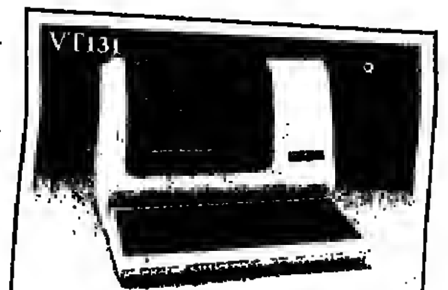


A New Economy Terminal. The VT101
The VT101 has all the well known features of the basic VT100 but at an economy price – designed for people who don't foresee the need to add a printer or to use the VT100's extra space and power.

Alternatively, you might consider the VT131.
With the most popular VT100 options but again without expandability – the VT131 has an advanced video package with blinking characters, underlining, and a full 24 lines of 132 column characters. This package lets you maximise Digital's form handling and editing software.
The VT131 comes with printer port and five full and half-duplex protocols. And editing capability plus block mode transmission.



Then, of course, there's the VT100 itself
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We change the way the world thinks.

A milestone in hi-tech novels – it's plausible!

Fallback. Peter Niesewand. Granada Publishing. £7.95.

NOVELS that take computers seriously, without crediting them with superhuman intelligence and emotions, are rare. Add in such a book a hero who can discuss the relative merits of Algol and Fortran, a heavy dose of espionage, human drama, horror and a hint of romance and you have an inkling of the gripping story that Peter Niesewand has produced.

The year is 1983, and the US Defense Intelligence Agency has discovered that the Soviet Union has a bank of nuclear missiles aimed at strategic Western cities, and ready to fire. Since they are controlled by an IBM computer, the DIA decides to end in an expert to alter the programming at the Volnga base, a seemingly impregnable stronghold.

Niesewand explains the DIA's unlikely choice of fifty-eight year old Professor Ross for the job by saying that no-one else has the right combination of technical ability and fluency in Russian, but it still seems a little contrived. It is, though, essential to the plot because, having trained the professor mentally and physically for his role, the DIA discovers that he is suffering from terminal cancer and has to face the dilemma of using his brain without his body.

Photo: Terence Donovan

PETER NIESEWAND . . . Gripping story.

What follows is a compulsive, fast-moving tale that picks its way with surprising ease through a minefield of legal, moral and medical ethics, but is at no time completely implausible.

Research has been done meticulously, as one might expect from a journalist of Niesewand's calibre. His characters talk confidently and correctly about hardware and software, although the probability of anyone being able to reconstruct a program consisting of modules written in different languages from output prints is remote.

About half the book is devoted to the Russian side of the operation, and the character of Filipp Ivanovich Levin, who collects information on Vologda for the DIA, is particularly vivid.

This is a clever first novel and undoubtedly could be turned into an equally good film. It is also a milestone for the computer industry, showing that an exciting book can be written about programming without entering the realms of the ridiculous.

Maggie McLening

BCPL text should be essential for systems programmers

BCPL – The Language and Its Compiler. Martin Richards and Colin Whitby-Strevens. Cambridge University Press, 1982. Paperback. £4.95.

THE BCPL novice, the established user, the language implementer and the student of compiler writing are the four categories of readership for which this excellent text is devised.

The text is concise, well written and well presented and makes a welcome appearance in paperback form.

BCPL has a wide variety of systems programming applications and the first three chapters introduce the potential user of BCPL to the language philosophy, main features and advanced features.

Chapters 4 and 5 cover the library, language extensions, debugging and error handling. These will be of particular benefit to the experienced user since previously much of their content has only been available as a kind of folklore.

Useful material on compiling techniques and compiler portability, not only for BCPL, form the next two chapters, and the formal language definitions complete the book.

A clear enunciation of the BCPL philosophy and examples of good programming style pervade the text. These, together with the price, make it very attractive as a course text and several chapters include exercises of varying difficulty (but no solutions!).

It would possibly have been interesting to have included some illustrative applications other than the slightly incestuous BCPL compiler written in BCPL.

However, overall the intended readership should be well satisfied and a wider audience can be anticipated to the extent that it should be regarded as essential reading for anyone genuinely interested in systems programming.

Tony Powell

Head of Computing & Mathematical Sciences department, Wolverhampton Polytechnic.

Announcing . . .

COMPEC SCOTLAND

. . . Scotland's own professional computer show.

The highly successful Compec exhibition of computers, systems, peripherals and software is to be held in Scotland for the first time this year.

Compec Scotland in Glasgow between September 7-9, 1982 will allow companies selling into this important market to focus on computer users throughout the country.

Surveys of visitors to computer exhibitions demonstrate that users prefer to attend a show which is local to them. Compec North was enthusiastically welcomed in Manchester last year, and has expanded for the 1982 event in June.

Now Compec Scotland with a venue in the centre of Glasgow ensures a place at the heart of another key market.

For information about exhibiting at Compec Scotland contact Chris Timmins, Executive Director, IPC Exhibitions on 01-643 8040 Ext 4869. Or clip the coupon.

Another successful Computer Weekly show.

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Return to: Chris Timmins, Executive Director, IPC Exhibitions, Surrey House, Throwley Way, Sutton, Surrey SM1 4QQ.

Suits correspondence or flexi-study course

30-Hour Basic. Clive Prigmore. National Extension College Correspondence Texts. Prepared for The Computer Programme on BBC Television.

THIS beginner's manual is unusual in that it actually gives an estimate of the time needed to complete the course. The student can study on his own, use the book as the basis of a flexi-study course, or enrol as a National Extension College correspondence student.

Access to a computer is not a necessity but has obvious advantages, particularly for a student working alone. Most of the course will run on any microcomputer and the form of Basic used has been chosen to suit the majority.

The aim of the course is to teach the Basic language and sufficient programming skills to use it well. It covers the essential points of the language but makes no attempt to be a comprehensive study. A second stage will be available shortly.

Instruction is given in nine subdivided units on simple statements, decisions, strings, lists, strings and printing, games, numbers, data processing and file handling. Unit one makes an encouraging introduction, for while fifteen subjects are covered, the pace is easy and both explanations and diagrams are admirably clear.

A similar step-by-step approach with visual explanation is used throughout, and the use of green print for significant vocabulary and statements and for certain margin notes aids clarity.

Examples are used to illustrate new points and there are opportunities for those with computers to key in problems themselves. Students can test their understanding at each stage by doing the quick self-assessment questions and the longer exercises, the answers for both being at the end of the unit.

For those with the advantage of tutors, the assignments, for which there are no answers, will provide further practice.

This book will make an excellent introduction to Basic for any student.

Rosemary Shepheard

Freelance journalist

Hobbyists' questions get logical answers

Microprocessors: Your Questions Answered. Alec Wood. Newnes Technical Books (Butterworth). 155pp.

THE previous book in the Newnes Microcomputer Book series, "Practical Microcomputer Systems", left a few technical questions unanswered. This book, however, is aimed more at the newcomer to the industry or first time computer student.

The question-and-answer format covers such major areas as silicon chips, hardware, software, logic and programming techniques. Typical questions are "What microprocessors am I likely to come across?", "What is meant by interrupts?" and "What is meant by static, dynamic and volatile memories?".

Just about the only question not posed is "How do I get into computing?".

In fact, it is not long before some of the questions themselves are in need of some sub-questions. By page three, we are being asked, "What are DTL, TTL, NMOS, PMOS and CMOS?". Only those with correct answers can go on to face the next question, "How are MOSFETs used in integrated circuits?"

Before long the reader is faced with such intriguing matters as "What is a flip-flop and what does it do when it flips?" and "How can the microprocessor be made to jump in a program?"

The author, who displays a strong command of his subject, tends to direct the book towards the enthusiast rather than perhaps the business user or DP professional. The book has a clear and logical presentation and certainly makes an interesting introduction to the microprocessor world. Just about the only questions ignored are those relating to applications and costs.

Perhaps Newnes will now produce a book aimed at the everyday micro user: the reader who is more concerned with what it does rather than how it does it. In fact, a Practical Guide to Do-It-Yourself microcomputing could become as big a seller as the micro itself.

Alan Simpson

Technical standards microfile

TECHNICAL Indexes has launched a microfile of the technical standards for computers and communications technology to coincide with the start of Information Technology Year. It is aimed at those involved in the design, development and manufacture of computer and communications systems and equipment.

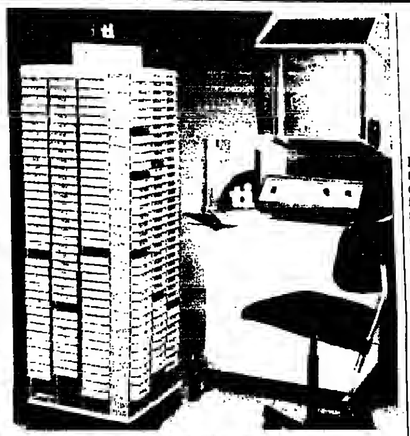
The standards are provided by Technical Indexes either in compact microfilm cartridges or on microfiches housed in two binders with a microfiche reader. As well as comprehensive indexing by number and subject, the file is updated by Technical Indexes every six months, incorporating all new and amended documents.

The standards included at launch are the CCITT (International Telegraph and Telephone Consultative Committee) Recommendations, the ECMA (European Computer Manufacturers Associates) Standards and the relevant ANSI (American National Standards Institute) documents.

The Computer and Communications Technology file extends the range of information services from Technical Indexes, which provides international standards and regulations on microfilm.

These include files of EEC technical legislation, German (DIN) standards, International (ISO) standards, NATO Standards and Export Requirements.

Technical Indexes Ltd (CW), Willoughby Road, Bracknell, Berks RG12 4DW. Tel: Bracknell (0344) 26311.



Technical Indenes' microfile of technical standards.

Recovery centre for mini users

RECOVERY Operation Centres, the portable disaster recovery centre specialist, has made a new facility available for users of minicomputer-based data processing systems and mainframe users employing distributed minis.

Until recently, the company has geared the design and provision of portable disaster recovery centres to large-scale computer users, providing the necessary air conditioning, power distribution and raised floor facilities required to enable mainframe users that have lost the use of their computer centre to recover from the disaster as quickly as possible. This type of service is now available for minicomputer users.

The cost of the service depends on the size of the Mini-ROC required, although as a guide the standard 528 sq foot unit costs approximately the equivalent of £7 a week.

Recovery Operation Centres (CW), 7 Mount Park Road, London W5 2RP. Tel: 01-991 0277.

NCR aims 'easy to use' terminal at the finance market

A FINANCIAL terminal which can be programmed in Basic is available from NCR. The 2262 Financial Teller Terminal allows banks, building societies and other financial organisations to introduce systems handling financial transactions.

The 2262 consists of a keyboard with 44 keys which can be programmed to handle different functions, a screen with 16 40-character lines, plus a journal printer, all in a single, extremely compact unit. Control electronics include 64 Kbytes of random access memory.

Hardware options include a magnetic stripe reader for entering information from plastic cards, a keypad for customers to enter personal identification numbers, a passbook printer, a digital cassette tape recorder for storing and loading programs and collecting transaction data and a currency dispenser which can accommodate a maximum of six denominations and can be shared by two tellers.

The passbook printer can be shared by up to four NCR 2262s, while a single 262 can concentrate data from 12 devices.

A variety of communications protocols are supported for online connection to a computer. The cassette tape unit option means the 2262 can also work offline as a self contained transaction handling terminal, perhaps transmitting data from the cassette at the end of the day to a computer.

It can be programmed in NCR Basic+, which enables the user to tailor the terminal to his precise needs using his own staff, or alternatively NCR can provide a complete systems and programming service.

Standard program packages are available for the 2262 from NCR to help users introduce live systems even more quickly. They include systems to handle most teller functions, including foreign exchange.

It costs £2,280 in single units.

NCR (CW), 206 Marylebone Road, London NW1 6LY.

Ethernet controller for S-100 based systems

THE LRT Fiftabyte 2.0 Ethernet controller from Sintrom Electronics provides connection to Ethernet for any S-100/IEEE 696-based computer using any Ethernet compatible transceiver, the company claims.

The design eliminates any overhead on the S-100 bus associated with processing Ethernet packet data at 10 Mbs. The controller provides buffer management, address recognition, backoff generation and error detection under hardware control.

Consisting of two standard S-100 cards containing state machine control logic, Serdes logic and CRC generation, the controller offers 16/64K of buffer memory, which may be mapped a packet at a time to any 2K window in the S-100 addressing space.

Unused memory is available for use by the system for data or program storage, while packets may be processed directly from the buffer memory or transferred to main memory.

The controller may be used in a polled or interrupt mode. Interrupts are provided for Packets Available, Transmission Complete, Transmission Error, and Multi-cast Packet Available conditions. No overhead is imposed on the system unless information specifically addressed to the station has been processed.

The hardware and CP/M driver fully support the ISO layer 0 and 1 (physical and data link). Complete CP/M support for Xerox Ethernet protocols (ISO layers two to six) will be available soon.

Sintrom Electronics (CW), 14 Arkwright Road, Reading, Berks. Tel: (0734) 85464.

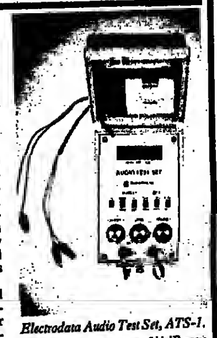
Network test set is portable

A PORTABLE audio transmission test set for fault-finding and measurement on data lines for computer networks is available from David Bisset. The Electrodata Audio Test Set, model ATS-1, has an audio signal generator, frequency measurement and accurate level measurement facilities, and is housed in a pocket-sized case.

It is battery-operated and will isolate faults and make measurements on the leased lines or "dial-up" lines that link two computer sites. It measures the loss and quality of a line, monitors noisy lines (it has a built-in speaker) and measures the receive and transmit levels of a modem.

ATS-1 measures signal levels between plus 6dBm and minus 50dBm to an accuracy of ½dB says David Bisset, and measures level and frequency (250 Hz to 4000 Hz) on a 4-digit display.

David Bisset (CW), 52 Luton Lane, Redbourn, Herts AL3 7PY. Tel: (058285) 2637.



Electrodata Audio Test Set, ATS-1.

CRT for office equipment

A FOURTEEN-inch super high-resolution colour display tube, with a 0.2mm pitch shadowmask has been introduced by NEC Electronics (UK). Intended for automated office equipment applications, it is capable of a 6,300 alphanumeric character display.

Horizontal resolution has been boosted from 700/800 to more than 1,100 pixels with displays on 250mm x 180mm of the screen giving 1,120 pixels (horizontal) by 806 pixels (vertical). This is equivalent to 124 characters (horizontal) by 53 lines (vertical); a total of 6,572 characters each consisting of 7 by 9 pixels, says NEC.

NEC (CW), 116 Stevenston Street, New Stevenston, Motherwell ML1 4LT, Scotland. Tel: (0698) 732221.

Big news for everyone selling computer products and services to the Middle East

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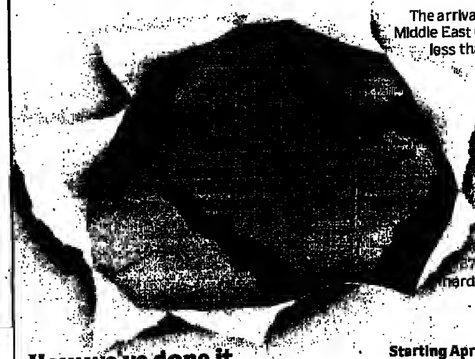

The arrival of IPC's unique new publication, Middle East Computing, means nothing less than that.

For the very first time, computer users in the rich Gulf States—and throughout the Arab world—have a regular journal reporting on the technology and services available to them, world-wide.

So now you can talk direct—and sell direct—to potential customers throughout this vast, fast-growing market. (A market which imported more than £4,000,000 worth of computer hardware alone in 1980).

How we've done it

Middle East Computing began as a single-issue publication, backing the Gulf Computer Exhibition and Conference at Dubai last December. Its enormous success revealed such an urgent and widespread demand for computer product information that it will be published regularly from April.

6000 copies will be sent to established computer users at key personnel within government and major business organisations, in the Middle East countries predominant in the computer market. The circulation was compiled through the full research resources of Computer Weekly and IPC Business Press backed by contacts made at the Gulf Computer Exhibition.

Starting April, through Middle East Computing, a vast, lucrative, crucially important export market will be thrown wide-open. If ever there was an open-and-shut case for advertising, this is it! Get the full details from...

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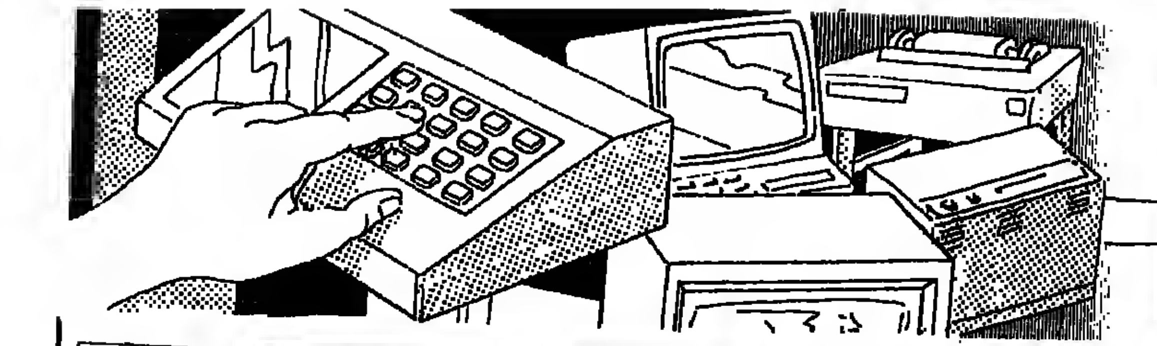

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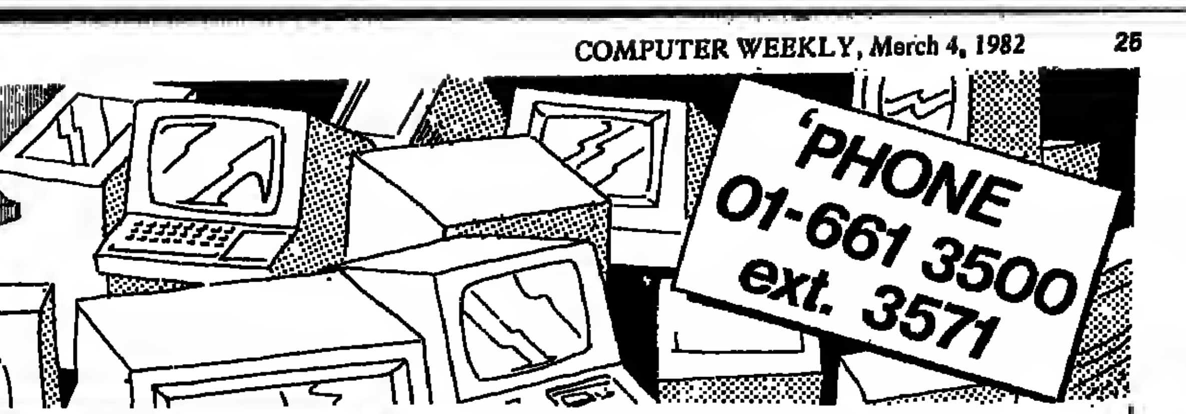

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Notice is hereby given that the West Sussex County Council wish to receive Tenders for the supply of computer equipment and associated software for Colleges of Technology. The appropriate tender forms, together with copies of the Conditions of Contract and a Specification may be obtained on application to the Head of Computing Services, County Treasurer's Department, County Hall, Chichester, West Sussex.

The County Council do not bind themselves to accept the lowest or any tender received. The tenders should be submitted on the above-mentioned Tender Form, and should be delivered to the County Secretary of the West Sussex County Council at County Hall, Chichester, West Sussex in a plain sealed envelope or package on or before 12 noon on 5th April 1982.

Nothing should appear on the outside of the envelope which would indicate the name of the sender.

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Colour monitor range

A RANGE of high-resolution colour monitors for OEM graphics applications has been introduced by Aydin Controls. Known as the Patriot Series, the new range of in-line gun monitors includes the Model 8810 with a 13-inch display and the Model 8830 with a 19-inch display, and supplements Aydin's established family of delta and in-line gun models.

The Patriot series offers high video bandwidth, wide horizontal line rate, fixed convergence, excellent high-voltage regulation, modular construction, and the ability to accept analogue or TTL inputs.

Options include long-persistence phosphor tubes and neutral density filters. The monitors are available with or without cabinets.

Deliveries of the new monitors will begin early in 1982, and discounts are available for quantity purchases.

Aydio Cootrola/Vector UK (CW), 1 Hunting Gate, Hitchio, Herts. SG4 0TJ. Tel: (0462) 58804.

Drawings filmed, filed and retrieved 'within seconds'

A MICROFILMING and information retrieval system introduced by Mitek of Slough, will "revolutionise" the use of microfilm, overcoming the traditional problems of different formats, accurate re-enlargements from film formats and fast, efficient retrieval, says the manufacturer.

Drawings and documentation of different sizes from A0 to A4 can be filmed on to the same fiche, filed and retrieved automatically within a few seconds.

The Mitek system comprises an SVK and a UKM camera, manufactured in West Germany. The SVK conversion camera solves the historical and archival problems because it has always been difficult to standardise on one microfilm format. Therefore users often have documentation and drawings stored on a number of different types of microfilm, namely half-plate, 105mm, 70mm, 35mm, or 16mm roll film, 35mm aperture cards or fiche. With the use of the SVK conversion camera it is now possible for essential information which is stored on the different film formats to be converted to one type making it much easier for filing and distribution worldwide.

Colour transparencies can also be filmed or reduced to 16 or 35mm film or microfiche.

The UKM roll film and step and repeat camera handles current microfilming problems. This camera can film drawings up to 60mm × 40mm or A4 documentation on to the same fiche using reduction ratios up to 70 times.

The UKM camera also has an interchangeable copy table so that it can be used not only for filming plans but also documents, operating manuals, technical handbooks, journals, newspapers, bound volumes and industrial X-rays.

Mitek Micrographic and Reprographic Systems (CW), 828 Yeovil Road, Slough Trading Estate, Slough, Berks. Tel Slough 76411.

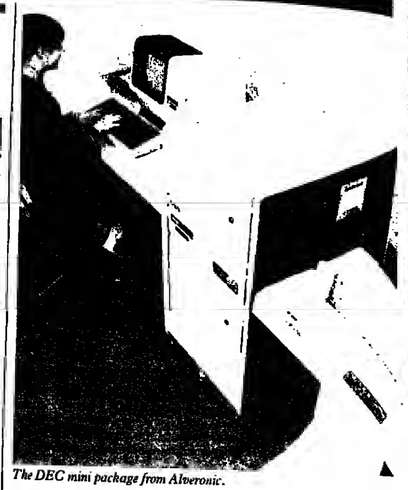
The Pericom 6809.

Multi-paging terminal

THE multi-page version of the Pericom 6809 visual display terminal allows examination and editing of several pages of text without being lost on forward scroll.

This option is valuable where reports or documents extend to several pages because the whole report can be studied on the screen going backwards and forwards as and when required.

Pericom Data Systems (CW), 1, Burners Lane, Kiln Farm Industrial Estate, Milton Keynes, Bucks. Tel: (0908) 564747.



The DEC mini package from Alveronic.

Powerful mini package for first-timers

A LOW-COST and fully upgradeable DEC minicomputer package aimed at the first-time user has been announced by Alveronic, one of the first authorised distributors to be appointed under DEC's new scheme.

For an inclusive price of £16,950, the user is said to get all hardware and software needed to establish computerised sales, purchase, nominal ledger, invoicing, stock control and payroll systems for his business, a three-month software warranty plus a year's free hardware maintenance. Delivery and set-up, a day's machine instruction and complete user manuals are also included.

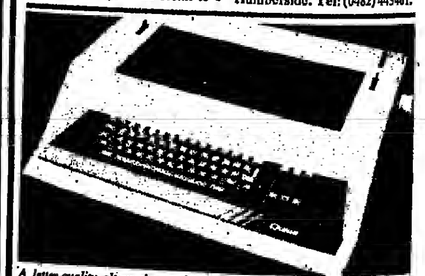
Says Alan Coates, managing director, "This new package meets competing systems head-on, with the significant advantage of offering an expandable, fully proven system from an authorised DEC distributor. The result is a powerful package with a minimum of user risk."

The starter package comes at a cost some 30% below the normal price of the component parts – a DEC 336 Datasystem – says Alveronic. In effect, the standard software packages are being offered free.

Coates emphasises that, unlike some other low-price kits, Alveronic's is a real time, multi-terminal package using a proven and powerful operating system – DEC's Commercial Transaction System (CTS)-300. This provides fast response times and operation of up to eight terminals to cope with system growth.

Looking further ahead, the user has an upgrade path that will allow him to continue with his programs throughout the DEC range.

Alveronic Computer Systems (CW), Ryde Avenue, Hull, N. Humberside. Tel: (0482) 445461.



A letter-quality alternative to the draft quality interactive terminals is now available from Qume. Featuring the new MicroDrive print mechanism, the Sprint 9/35 daisywheel data terminal, seen here, can be supplied as keyboard send-receive or receive only units.

High-speed printing

THE microprocessor controlled 1200 Series Chain Train from Digital Associates is said to offer high-speed printing for heavy duty applications, plus superior print quality.

The 1200 Series offers four print speeds: 600, 900, 1000 and 1200 lpm with a standard 64 character set. The Series has many standard features which are optional or unavailable on other printers, including an electrical horizontal fine forms adjustment, two sets of motorised tractors, a diagnostic panel, self test feature and an automatic vacuum cleaner system.

Digital Associates (CW), 1239 E. Main Street, Stamford, Connecticut 06902. Tel: (800) 243-8054.

Micropad for IBM users

CONTINUING development work on the Micropad hand print data entry terminal has led to it being made available for IBM system users with 3270 BSC protocol. The interface has been achieved by an intelligent controller which can accommodate up to nine Micropads and an optional printer or console. Alternatively, the user may specify a combination of Micropads and other terminals.

The controller is available for immediate delivery and the price of a full nine-pad system is about £17,500. SDLC protocol will be released later this year.

Quest Group (CW), Quest House, Princes Road, Ferndown, Dorset, BH22 9HQ. Tel: 0202 871498 Telex: 41358.

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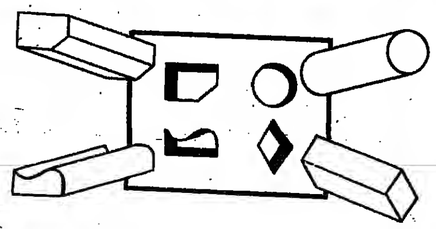

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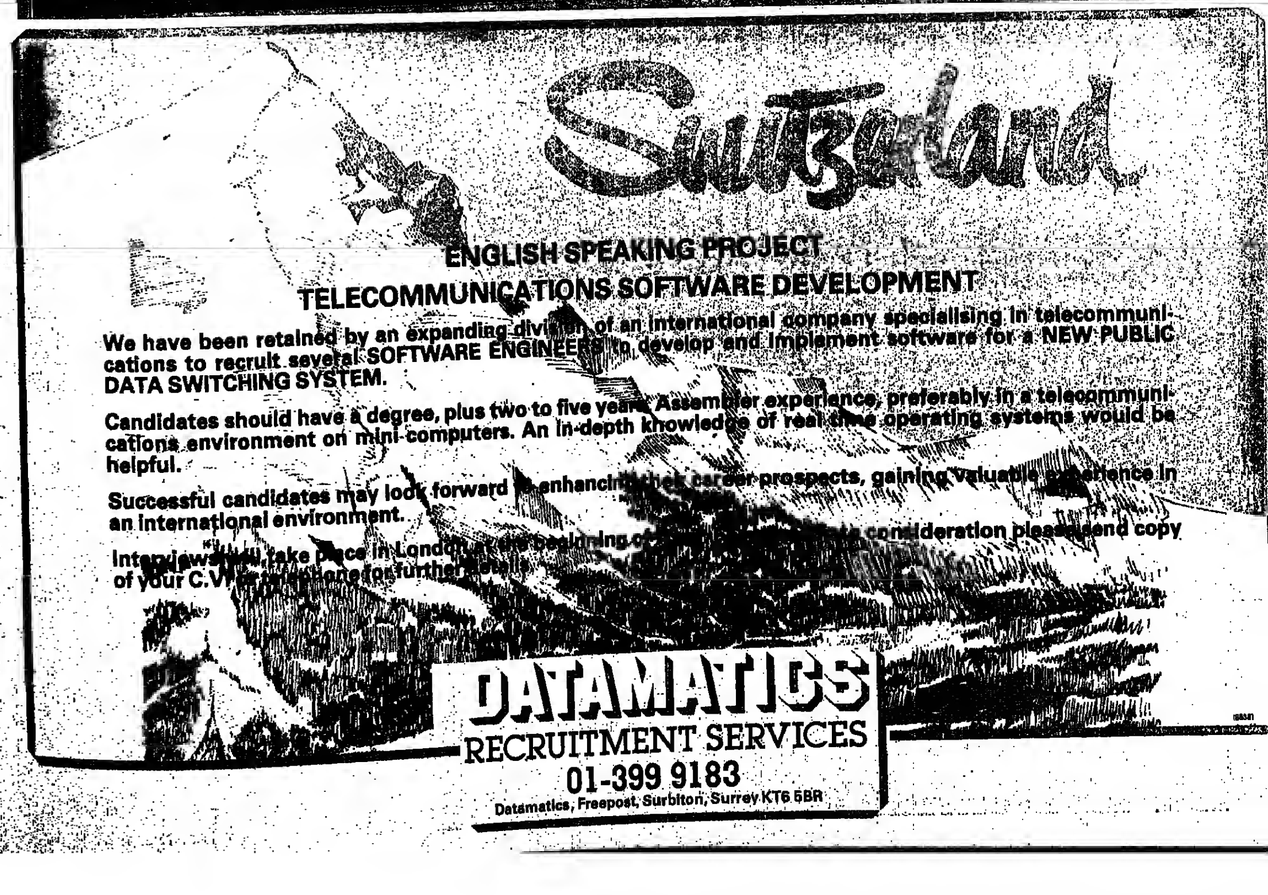

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Systems Programmers, Chicago, c£34k
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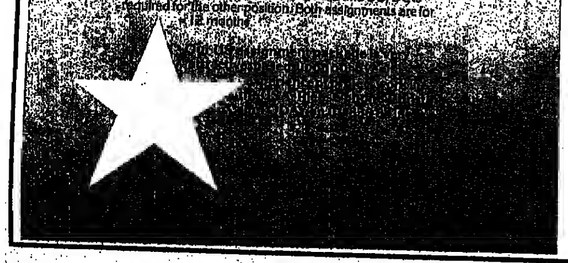

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Initially, the successful candidate will take responsibility for the installation of an IBM 4331, establishing standards and developing the Operations team, as well as assisting with the development of on-line and Database technology for Insurance systems, utilising CICS and DL1.

Candidates will have a proven background in a DOS/VSE environment, and be adequately conversant with the installation and support of CICS and DL1 software, which will include all aspects of Network Design and Control, and technical performance monitoring.

The ability to contribute positively to the establishment and growth of a new installation is of paramount importance, and management ability must be apparent if the individual is to be relied upon to build the in-house technical resource as expansion demands.

To arrange an initial interview, call Rex Ashcroft or Andrew Carter on 01 935 0671 during working hours (24 hour answering service), or submit written career history to Rex Ashcroft at our London office if you prefer.

Specialist Computer Recruitment Ltd.

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Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY.
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA.
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Whilst attitude and the ability to work in a small team are undoubtedly the most important prerequisites, it is envisaged that the successful candidates will have been educated to degree level. They must have a minimum of three years' relevant post-graduate experience, involving a considerable amount of low level programming on mini or micro-computers. Any knowledge of PDP-11s and RSX-11 would be of interest, as would IBM communications experience or technical systems anulysis skills.

For further information please contact **Myriad at Reading,** quoting Reference RT1/0403/CW

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Systems Analysts will have excellent prospects working on a wide range of development projects; both improving existing applications areas and working on proposed new developments utilising T.P. and database techniques. Current hardware consists of mainframes and a distributive network of mini computers, illustrating the company's commitment to data processing.

You will have a minimum of three years' systems experience with a knowledge of commercial and financial applications and be capable of demonstrating both enthusiasm for and skill at solving user problems.

The Company's benefits package includes excellent salaries, a bonus scheme, contributory pension and substantial staff discounts.

To find out what lies beneath this surface information and to obtain a company profile contact David Escott NOW on 061-491 1666 during office hours or Southport 211554 evenings and weekends.

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Openings in Malaysia

for specialists in

Computer Assisted Operations (Process Control)
Computer Graphics
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Operations Research

for senior positions in a developing environment as Systems Analysts, Database Administrators, O and M Analysts

Sarawak Shell Berhad and Sabah Shell Petroleum Company Limited are major oil exploration and production companies operating offshore and onshore in the eastern states of Malaysia. A number of significant developments in their operations are in hand. They are seeking Malaysian citizens to fill senior positions in the Information and Computer Services Department based at Lutong, Sarawak.

Candidates should hold a degree or professional qualification and have a minimum of 4 years' relevant employment experience, or without a degree at least 8 years' such experience. Only those who satisfy these requirements will be considered, and candidates must be self-motivated and capable of working in this challenging and growing environment. The preferred age range is 30-35.

The Department operates a 4MB IBM 4341 supporting a local and remote on-line network for company locations in Sarawak and Sabah. Current IBM software includes DOS/VSE, DL/1, CICS, STAIRS, GDDM/PGF, and the main programming languages are Cobol, Fortran, Mark IV and Trans IV. A second IBM 4341 is being considered for installation late 1982 when VM with CMS/APL will be introduced. Other computers include an intergraph (with PDP 11/70 CPU) using RSX11M-PLUS and IGDS/8, PDP11/34 using DSM11, PDP MINC using RT11, and 11P1000.

During 1983 real-time control and data acquisition systems for gas production operations will be introduced. Major information and application systems are being developed, or planned to be developed, in support of company activities such as drilling, oil and gas production, engineering, petroleum engineering, personnel administration and finance administration.

Initial salaries will be attractive and commensurate with experience and qualifications. In addition there is free medical treatment for employees and their immediate dependants, an attractive bonus scheme and generous retirement benefits. A housing allowance is provided and relocation assistance will be given.

If you are interested in any of these appointments, please write giving full personal, education and employment details to:

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Recruitment Division, PNEL/41, (C6),
Shell International Petroleum Company Limited,
Shell Centre, London SE1 7NA.

logistix Logistix Recruitment Limited
10 Greenville Place, London SW7 4RW

Telephone 01-373 3063

Comms. Consultants
U.S./London: Salaries to £17k + Allowance

Consultants and Senior Consultants with extensive Software and Hardware design and development experience in the fields of Voice/Data PBXs, Public Data Networks and distributed processing networks are urgently required by a leading Communications System Supplier and Consultancy. These positions will strongly appeal to those who not only wish to participate in the formulation of data communications strategies but also have an interest in retaining a strong technical bias in their work. Naturally, familiarity with ISO and CCITT standards is a prime requirement and those applicants who have sat on one of the standards committees will be especially welcome. A degree of mobility is essential as most positions involve some European or transatlantic travel. Ref: L/9/A.

Database Consultants
London: Salaries to £16k

Our client, a leading international Systems and Software Consultancy, is renowned for its specialist expertise in the field of Database Management Systems. Current requirements are for Database Analysts, Designers and Administrators to be based at its Headquarters in Central London. Applicants should offer a minimum of five years' Data Processing experience in either a minicomputer or mainframe environment. In particular, you should have an in-depth knowledge of a DBMS and preference will be given to those who have worked with IDMS, RAMIS or TOTAL. As a strong feature of these positions is client liaison, candidates should be prepared to travel on a short-term basis both in the UK and overseas. Ref: L/9/B

Micro Pascal
Herts: Salaries to £10k

The Research and Development division of a leading multi-national corporation requires a number of Programmers to assist in the development of both Applications and Systems Software. All respondents should possess a Degree or H.N.C. in a relevant discipline followed by at least two years in industry. A minimum of one year's development experience on either Intel 8080/5/6 or Z80 based systems, preferably running under CP/M or UNIX is essential as is fluency in Pascal. A knowledge of post-coding techniques and an Assembler language are useful supplementary skills and will attract a salary premium. Ref: L/9/C

O.S. Development & Support
Thames Valley: Salaries to £13k

A number of Operating Systems specialists with at least one degree, are required by a highly successful mini-computer manufacturer. Based in their recently opened U.K. offices, successful candidates will be responsible for the development and support of Operating Systems software. Fluency in Fortran would be ideal although any high level language would be acceptable. 11 is, however, essential that all respondents should have at least three years' experience in the tailoring, installation and support of a leading O.S. such as RSTS, RSX/11, RDOS, or PRIMOS. The majority of time will be spent in-house but, as a certain amount of travel is a feature of these positions, the possession of a valid driving licence is required. Ref: L/9/I

Real-Time Computing
Surrey/Hants: Salaries to £12k

On behalf of an expanding Systems Supplier and Consultancy we are seeking a number of Software Programmers and Applications Engineers. Of particular interest will be those who have participated in the development of PDP 11 or VAX based real-time systems or alternatively have gained experience of simulation systems utilising any 32-bit minicomputer. Software expertise should include fluency in a high-level language such as RTL/2, Pascal or FORTRAN with preferably a good knowledge of an Assembler as a subsidiary skill. Candidates who have also worked in a multi-microprocessor environment will be especially welcome. Certain positions will entail a degree of mobility both nationally and internationally. Ref: L/9/E

Sales & Marketing Engineers
Thames Valley: Salary £13k + Car

A leading Software and Total Systems Supplier has a requirement for a Sales and Marketing Engineer for its Regional Headquarters. Candidates, preferably aged 28-35 years, should hold at least one numerate degree. It is an absolute condition of this appointment that you should offer direct experience of all of the following work areas: marketing studies, product appraisal and planning; "front-line" sales involvement to either the public or private sector; in-house and customer technical support of microprocessor based systems within a high technology environment. Of additional benefit will be those candidates who can demonstrate expertise in software development of compilers and the generation or tuning of real-time orientated Operating Systems for which a salary premium will be paid. Ref: L/9/F

Data Communications
Central London: Salary to £13.5k

A highly regarded multi-national Company based in Central London and within close proximity to rail and underground facilities, is seeking a Data Communications Engineer for its internal computing facilities. The successful candidate should be fully aware of the high technology products currently available, i.e. Word Processors, Local/Remote Area Network and Message Switching devices. You will be required to participate in the evolution and implementation of an internal Corporate strategy. Of special interest will be those candidates who have an appreciation of communications protocolling techniques, i.e. X-25, SDLC/HDLC. Since you will be expected to liaise and co-operate with personnel at both senior management and directorship levels, the ability to write clear, concise reports for use by non-technical staff is of paramount importance. Ref: L/9/G

Fortran Programmers
Home Counties: Salaries to £9k

Fortran Programmers are urgently required by the design and development group of an engineering consultancy. Suitable applicants will probably be graduates who have been employed in a real-time mini-computer environment for at least one year. Fluency in FORTRAN is essential and whilst there is no particular hardware requirement, there is a stated preference for candidates who have had exposure to DEC PDP 11. These positions represent outstanding opportunities for applicants who wish to be involved in the design and development of complete systems in the engineering industry. Particular projects in which the Company is currently involved are Mechanical Drawing, Graphics, Production Control and I.C. Design. Ref: L/9/H

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The range of services currently provided include the sale and support of Software products and packages, education and training, business consultancy, turnkey project development and contract programming and analysis support.

Our 1982 growth plans include the installation of IBM S/34s in our UK and USA offices and the expansion of our management team as follows:

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The major responsibility is to expand the company's European client base. Candidates will have a proven record including on target sales achievements in Computer Services business. Experience of the European market and, ideally, an ability to communicate in the French language. We are looking for a professional with self motivation and a personal need to be successful.

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★ Company Car

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This position is based at our UK office, although overseas travel opportunities will definitely occur.

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Both positions carry the usual company fringe benefits.

Applications will be treated in the strictest confidence and should be addressed to:

The General Manager

TANGENT COMPUTER SERVICES

102/106 South Street, Romford, Essex

Tel: Romford (0708) 750201 (24 hour answering service)

[8796]

FTB

Team Leaders And Senior Programmers

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An excellent opportunity to join this progressive Systems House involved in quality interactive products aimed at the industrial sector. Utilizing mini computers and database techniques, the main applications area is manufacturing.

For the senior positions applicants must possess around six years experience of COBOL gained in an on-line systems environment. They must also be good motivators and be capable of scheduling and quality control.

Programmers should have around three years COBOL on any hardware with knowledge of manufacturing or similar applications. The ability to meet deadlines and take responsibility are considered important prerequisites. First Class package offered.

Contact Brian Postlas

Senior Systems Analysts

Hampshire — **To £12,500**

Following considerable interest in their sophisticated high quality products this expanding Systems House is set to accelerate into a significant market position.

Senior Analysts are required to strengthen dedicated teams of career minded professionals involved in development and implementation of complex systems. Main areas of experience should include:-

Interactive Systems
Mini Computers
Manufacturing Applications

You should also have been involved from feasibility through to implementation of at least one total system.

An excellent range of benefits complements the starting salary.

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COBOL Programmers

London/Hampshire — **To £9,500**

This established Software House, specialising in finance and banking, have urgent requirements for COBOL Programmers to develop and implement complete systems on client sites.

To enable our clients to meet current market demand for their professional services, candidates must offer a minimum of two years COBOL on Data General, T1990, NCR or other similar minis.

These are excellent opportunities for candidates who are mobile and enjoy variety. First class package offered.

Contact David Hendry

Software Designers/Programmers

West of London — **To £12,000**

A rapidly expanding Technical Systems House, with a full range of new product announcements, requires Software Designers and Programmers to strengthen teams and capitalise on market demand.

Operating in the areas of micro based information technology products and local networking, they are at the forefront of their field. Experience of Pascal, Office Automation and Communications are the main qualities sought. The ability to motivate teams and control projects are important together with personal ambition and enthusiasm.

Contact David Hendry

Analyst/Programmers

London — **£8-£10,000**

Our client, an International Energy Company, heavily involved in the U.K. oil and gas fields are looking for computer professionals to join their Commercial and Scientific Systems Division.

Applicants will preferably be educated to degree level and possess 1 to 2 years IBM experience programming in either COBOL or FORTRAN. Exposure to MVS and/or TSO are desirable but not necessary.

There are a wide range of interesting projects offered including corporate financial planning utilizing the latest techniques of interactive programming.

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Contact David Hendry

Analyst/Programmers

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An international leisure group are about to embark on a significant real-time systems development programme. They urgently require experienced GSD Analyst/Programmers to enhance their existing project teams.

Applicants should have at least two years RPG II, be capable of working to pre-defined standards and be able to communicate effectively at all levels.

The company offer good working facilities, excellent salaries and subsidised travel.

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Senior Programmer, Software Designer with VAX experience including knowledge of communications/VMS. Must have several years technical computing experience.

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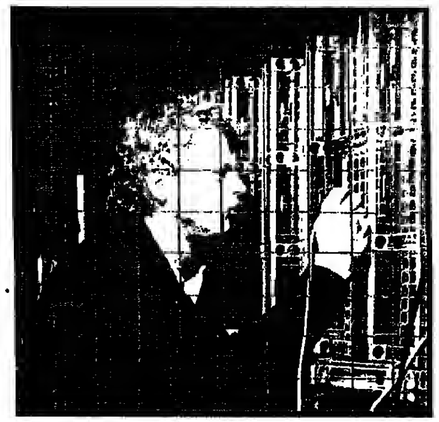

Ireland

System Test Engineers

Amdahl is one of the world's most successful manufacturers of large scale compatible mainframes. Our success springs from recognition that progress in this field means concentrating on the essentials. That means attention to detail in manufacturing, and testing to the highest standards of quality and reliability.

To maintain this standard we are looking for a small number of Highly Competent — **SYSTEM TEST ENGINEERS** who will be responsible for final test, debug and verification of Amdahl Computer Systems. You will work in a professional team where prospects of advancement are excellent. We place a high emphasis on training, both in Ireland and in our headquarters in Sunnyvale, California.

To be considered for these positions you should have 3-5 years experience in final test or field support on medium to large scale computer systems. Experience of IBM 360/370 or compatible systems would be advantageous. An appropriate degree or equivalent technical qualification is desirable.

For Engineers, moving to Ireland represents several major benefits. It is one of the world's fastest growing computer industry bases. There are no local government rates and housing is available considerably cheaper than most parts of the U.K.

Amdahl is situated in an ultra-modern complex in Swords on the outskirts of Dublin. The Irish operation is an assembly and test facility exporting mainly to Europe. Our current workforce is just over 200 and this will continue to increase over the coming year with the introduction of our new computer, the Amdahl 580.

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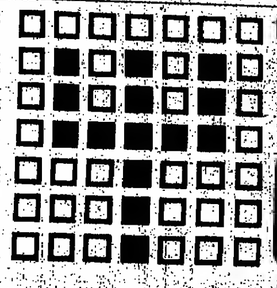

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HOLLAND VIA I.A.

Our client, a company servicing the administration for a major oil and shipping concern are now in the last phase of an uprade from **2 x IBM SYSTEM 34's** to **SYSTEM 38's**. They now urgently require a first class **ANALYST** as an **ASSISTANT** to the **SYSTEMS MANAGER**.

The ideal candidate should already be using **RPG III** but if a really excellent knowledge of **RPG II** is already held our client is prepared to train the selected applicant in RPG III.

The successful candidate must be a 'SELF STARTER' quickly able to establish himself as a MAJOR member of a small team. He/She will assist in the development of a new **MANAGEMENT INFORMATION / ACCOUNTANCY** application which will integrate with the current **ON-LINE INTERACTIVE DATA-BASE** which has been implemented.

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Working conditions in this English speaking environment are superb, and the position is open to single or married applicants.

Outlined above is a selection of current requirements. Space and time make it impossible to list all the opportunities available. Therefore is you would like to work overseas and for a highly-respected service company, please telephone or send your career resume to me because I may well already have an excellent opportunity to offer you.

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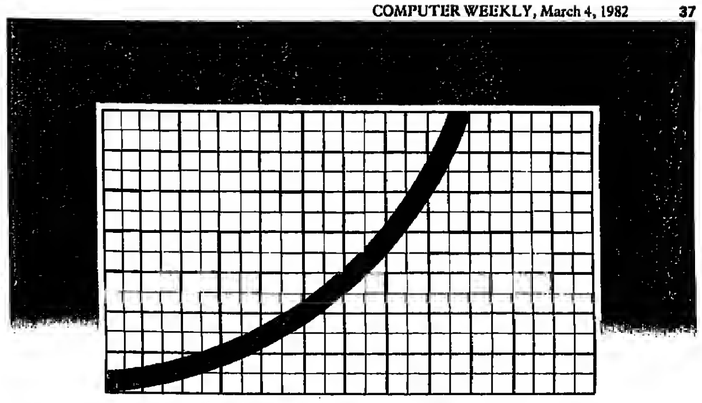

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Ideally the people we seek will not only have proven computer sales experience but should also be able to demonstrate detailed knowledge of specific commerce/industry requirements e.g. Retail Distribution, Motor Trade, Professional Services and General Business Systems. Put your specialist knowledge to good use - and profit.

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OPPORTUNITIES IN THE MIDLANDS–1

DP at forefront of steady growth in job trends

by David Casey

QUOTING unemployment statistics as the key indicator of a region's economy is like taking a 10-second clip from a two-hour movie. The figure will provide no more than a superficial view of a complex scene, without casting any light on the underlying trends and conditions.

Nowhere would a false perspective of employment be more likely to result than in the Midlands — a loosely defined region whose economy has traditionally been dominated by heavy manufacturing industry.

Always an area heading the employment casualty league when industrial output declines, the Midlands is now providing an increasing range of job opportunities in the computer sector.

Computer-related activities are inevitably at the forefront of the growth, being detected across an area of the UK stretching from Worcestershire in the South to the lower limits of Merseyside. Moving East through the Birmingham conurbation, the steady improvement in employment trends is being felt as far away as Lincolnshire and Cambridgeshire.

In relation to the surge in employment experienced during the late 1970s, however, the number of new posts being created in computing is relatively small. But in the context of the most severe period of recession since the 1930s, the trends are encouraging.

Employment consultancies and agents plying their trade across the Midlands recognise the precarious state of the employment market. Companies are still in the process of becoming leaner and hungrier before they can embark on a longer term strategy of controlled expansion.

Mike Bedingham of Birmingham consultant M.K. Associates accepts that there is a lack of fluidity in the job market, but sees the problem lying as much with the candidate as with the employer. "There is a lack of people with the right kind of experience prepared to move between companies," he says.

"The threat of redundancy has been a major influence on staff mobility in the Midlands throughout the crisis. The substantial redundancy entitlements that would be earned after a career of perhaps five years with one employer would be lost in a transfer. On the other side of the coin, the last-in first-out approach makes the new employment even more vulnerable."

Accepting that the majority of recruitment is designed to replace existing members of staff, Bedingham maintains that employers could do more to stimulate a higher calibre of candidate: "In general, companies do not look outside their own marketplace in filling vacancies. I do not believe, for example, that the only people capable of selling computers are those who are already in this field.

"There is experience to be drawn in from related product areas. If more resources were invested in training, there would be a broader spectrum of candidates," he adds.

> I do not believe that the only people capable of selling computers are those who are already in this field

The view that employers could "cross-fertilise" vacancies was shared by Mike Hessian of S.R. Recruitment. When clients provide him with a broad job specification, there is usually little difficulty in finding a suitable person to fill the job.

He takes the example of a junior analyst. "This post could be filled by a senior programmer wanting to move up the ladder, or by someone from outside the computer industry with a relevant business background," he says.

"The problems start when an employer wants to match exactly the characteristics of the person who has just left the job."

Within an area covering a quarter of England, and providing employment for about seven million people, more localised variations in the recruitment pattern can be detected. Hessian finds that the greatest demand from employers is to the outlying districts. From his own analysis of the region, more opportunities exist in towns like Northampton, Banbury, Stafford and Stoke-on-Trent than in the heart of Birmingham.

The reasons for the disparity are structural, he believes. "Organisations in the major industrial centres are large manufacturers, while the outlying regions have a higher concentration of smaller companies in service and development activities. Expansion after the recession is more rapid in firms which are less dependent on heavy manufacturing."

Lee Walkinshaw is managing director of Computer People Midlands. He believes that the improvement in the market for first and second house purchases should help match suitable candidates to vacancies. "In our experience, employers can be supercritical over appointments, to the extent that they are unlikely to recruit the person they actually need," he says.

"But we find that there are a lot of rejections from candidates who are accepted for posts yet decline because of the relocation involved. The ability to sell a home should prove a positive influence."

Relocation expenses have a bearing on mobility within the Midlands. While attractive vacancies may exist in the more rural parts of the region, staff are unwilling to stand the cost of moving home.

Hessian attempted to quantify employers' attitudes towards this thorny issue: "The majority of large companies pay relocation expenses as a matter of course, but these are not generally the firms with the vacancies.

"Medium-size employers may cover the cost under protest, but the software houses and computer consultancies providing the greatest number of job opportunities resist the additional expense." He sees this as an unsatisfactory response.

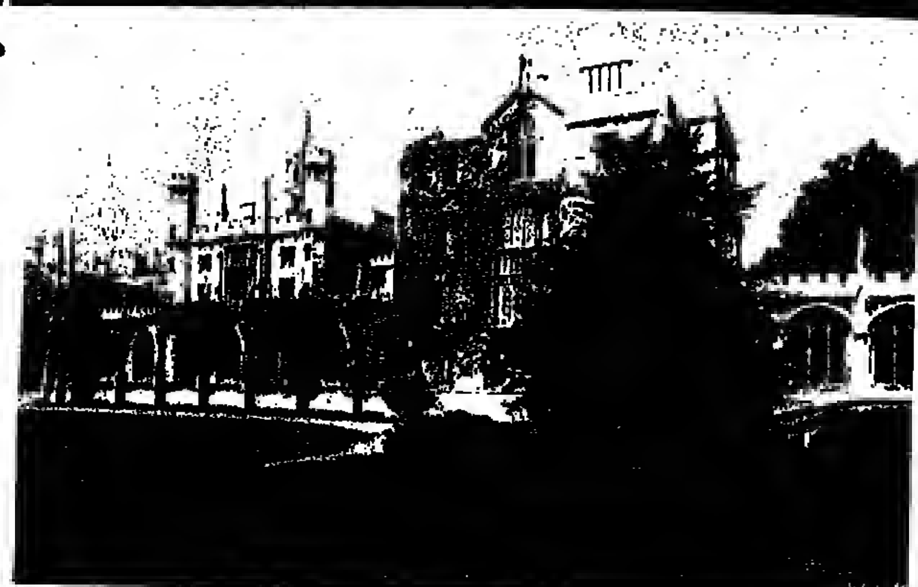
Whether moving from the London area to the Midlands could have an adverse effect on longer term career prospects was a question taken up by Don Knaggs, managing director of recruitment consultant McDowell Knaggs. "Many of the people we are recruiting from the South are coming here to advance their career," he notes.

"While I would accept that only a minority of data processing development is taking place in the region, there is considerable opportunity for appointments in DP management and computer applications within Midlands industrial companies."

A similar bias towards staff with experience of process control, or any form of real time application on minicomputers and micros was noted by Digby Dyke, manager of Staveley Computing in Worcester. Away from the heavy industrial centres of Birmingham and West Bromwich, the employers he is serving are predominantly scientific or electronic engineering firms. Financial institutions are now forming part of Staveley's client base.

With a permanent crew approaching 200, and a further 150 contract staff assigned to Midlands sites, Security Computing of Birmingham is ideally placed to monitor trends in the region's economy. Barry Fisher, the company's management services manager sees contract personnel playing a crucial role in a firm's recovery after the recession.

To claim that a background in computing is Open Sesame to employment in the Midlands would be wholly unrealistic. But for staff able to provide expertise in production-related areas, the prospects are good.



Cambridge is feeling the improvement in employment trends. Pictured is St John's College.

ANALYST PROGRAMMERS

We are a highly successful company manufacturing precision engineered products for a world-wide market.

We currently use an IBM System 34 with 13 terminals, a processor of 256K and 256MB disk capacity.

An IBM System 38 is currently under consideration. Existing applications cover financial and production systems with the emphasis on future developments being in the production areas.

Currently various System 34 packages are being analysed to determine their use in our future development programme.

The successful applicant will have had considerable experience in industry to include commercial, financial and production functions and have had at least 4 years EDP experience.

An extensive knowledge of IBM System 34 is required and knowledge of IBM System 38 would be desirable.

A competitive salary will be offered together with the benefits associated with a progressive company. Substantial relocation assistance will also be provided where necessary to this pleasant rural area where housing is favourably priced.

Write for an application form or telephone our Recruitment Officer, Mr. S. Murphy on Grantham (0476) 5577.

British Manufacture and Research Company Ltd.

For the best view of the computer recruitment scene, take a look through Executive Post.

Executive Post is the weekly national jobs journal from PER — Britain's largest executive recruitment consultancy.

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OPPORTUNITIES IN THE MIDLANDS–2

SYSTEM ANALYST to £8.5K
ANALYST/PROGRAMMER to £7.5K

The Salter Group of Companies are about to embark upon an ambitious plan to develop computer-based information systems. The existing systems, using a variety of Data Processing equipment, are to be replaced by an integrated solution specifically designed to meet the requirements of the operating divisions.

The appointments offer the opportunity to join a small highly skilled team using the very latest Hardware and Software techniques.

Candidates must possess proven data processing experience within a manufacturing environment. Experience in database design, R.P.G programming and the use of IBM System 38 would be an advantage.

APPLY TO: MR R. A. CLAGUE
GEORGE SALTER & CO LTD
Spon Lane, West Bromwich, West Midlands
Tel: 021-553 4884
(6682)

SYSTEMS ANALYST/ PROGRAMMER
c.£9,000

To meet the challenge of continuing company growth, J. W. Thornton Ltd., manufacturers and retailers of high quality confectionery, require an experience Systems Analyst.

You'll join a small team currently engaged in the production of systems on Hewlett Packard 3000 hardware. The work will involve the design, specification and testing of software systems and the implementation with users.

You should have at least 3 years' experience as a Systems Analyst together with the ability to communicate effectively. Additionally you'll need to be flexible and self-motivating as the post will at times involve working on your own initiative.

The salary and fringe benefits are attractive, including relocation expenses, and the job offers a genuine opportunity to make a significant contribution to the future development of the company's computerised systems.

For an application form please write or telephone the Personnel Services Manager, J. W. Thornton Ltd., Derwent Street, Belper, Derby DE5 1WP. Tel. Belper 4181.

Thorntons (8702)

Systems Development Manager

Birmingham c £12,000 plus car

Management skills, the ability to develop new ideas and a sound grasp of what management information systems should be, are of prime importance in this position within a manufacturing division of a UK Engineering Group. A high level of technical competence is expected with experience of IBM System 3 or 38 desirable and RPG II knowledge essential.

Promotional prospects within the organisation are very good indeed given a successful period in this initial appointment.

Preference will be given to graduates or equivalent aged 30 plus who have previously held responsibility for the control and motivation of systems analysts and programmers.

Applicants, male or female, should either write or telephone quoting Ref. B2121.
(8683)

Peter Nurse
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THE UNIVERSITY OF ASTON IN BIRMINGHAM
DEPARTMENT OF ELECTRICAL & ELECTRONIC ENGINEERING

Research Assistant
Digital Image Processing

Applications are invited for the above post to work on a three-year SERC sponsored programme of research in digital image processing.

Applicants should preferably be qualified to honours degree level in electronic engineering, computer science or a related discipline. Experience of real-time software development and/or digital signal processing, while not essential, would be an advantage.

Commencing salary will be within the range £6,285-£6,070 per annum, rising by annual increments to £7,700 per annum.

Application forms and further particulars may be obtained from the Staff Officer (quoting Ref: 500/102), University of Aston in Birmingham, Gosta Green, Birmingham B4 7ET. Tel: 021-359 3511 Ext 201.

Closing date for the receipt of applications is 19th March, 1982
(6643)

UNIVERSITY OF BIRMINGHAM
DEPARTMENT OF PHYSICS
Hardware Engineer

Applications are invited for the post of Hardware Engineer (male/female) in the Elementary Particle Physics research group. The successful applicant will be required to design and commission electronic equipment including microprocessors. A degree or equivalent in an appropriate subject with a substantial electronics content is required. Some experience in an electronics service and development environment is desirable. The post is funded on Scale IB (£5285-£8925) by a rolling grant from SERC. The appointment will be for two years initially. Applications should be made to the Senior Assistant Secretary, University of Birmingham, P.O. Box 363, Birmingham B15 2TT, from whom application forms and further particulars are available, to reach him by Friday, 19th March, 1982.
(6653)

SOUTH WEST UNIVERSITIES REGIONAL COMPUTER CENTRE
UNIVERSITY OF BATH

SOFTWARE DEVELOPMENT

Programmers are required for research and development projects on mainframe and micro computers. Experience of VME/B Internals, Ada, compiler internals, MASCOT, CP/M, PERQ, Algol 68 Communications programming, ICL DAP, systems programming, or a Computer Science degree, will be a great advantage.

Salary scales: IB (£5,285-£8,825), IA (£6,070-£10,575) II £10,160-£12,880). The appointments will be for an initial fixed term.

Write or 'phone for further details and application form to: Personnel Office, Bath University, Bath BA2 7AY (Bath 61244) quoting ref 82/20.

Closing date: March 15
(6647)

Sales Executive (Mini Computers)
c£8500 + Car + Commission — West Midlands

Deritend Computer Bureau is a long established computer bureau and mini computer turnkey systems house providing sophisticated systems in the manufacturing, costing and financial accounting areas.
We are expanding the sales force for the mini computer turnkey systems and require a sales executive with a successful sales record in the medium to large mini computer market.
DCB has highly respected systems packages with a well established user base and a support team amongst the best in the industry.
Candidates should preferably have experience in manufacturing systems, but as DCB provides excellent systems training and support it is not essential.
A salary of c£8500, car and a high level commission on sales quota will be paid to the successful candidate.
Please apply in writing or phone David Sherry at DCB Ltd, Spring Road, Hall Green, Birmingham B11 3DR. Tel: 021-706 0271.

Senior Systems Analyst
c£8250 — West Midlands

My client is a light engineering manufacturer in the forefront of its product field.
They are seeking to recruit a Senior Systems Analyst to be responsible for the development of new applications and the maintenance of existing systems.
Reporting to the DP Manager, you will have control of a small team. You will work with users to identify and computerise their needs recognising the impact on both existing systems and future developments.
This ICL 2904 installation has both financial and production control applications. Current developments are using 7502 on-line equipment to develop interactive facilities.
Age 28+, mature, you will hold a relevant degree or equivalent and have extensive and proven systems and programming experience.
A salary of c£8250 and if necessary, a generous relocation package will be offered together with the fringe benefits normally associated with a major employer.
Write with comprehensive CV to Liz Bressington, Professional & Executive Recruitment, Fountain Court, Steelhouse Lane, Birmingham B4 6DS.

Senior Programmer
Negotiable salary — Redditch

A unique opportunity has arisen within a small but important DP section of a manufacturing user, to become involved in a team dedicated to re-evaluation of their hardware and systems. Re-structuring within this well established organisation will enable ability and loyalty to be rewarded. Applicants should have practical experience in COBOL and PLAN and a willingness to work conscientiously within an efficient team.
Contact Mr. T. Davies, at SEGTA, 5 Church Green East, Redditch, Worcs.
Tel: Redditch 60890.

Systems Analysts/Programmers
c£10500 — Midlands

Eagle Computing Systems is an expanding Midlands based software house with a reputation for maintaining high standards of software and documentation on the IBM GBC range of machines.
They currently require Systems Analysts/RPG II Programmers with 2/3 years proven experience of RPG II/RPG III and thorough practical experience of IBM systems 34 or 38. You should have a professional approach to your work and a sound knowledge of small business systems. You will work with a good team on interesting and varied projects.
The benefits include a salary of c£10500, paid overtime, family membership of BUPA, lunch allowance, telephone rental payment, bonus scheme together with company car and expenses.
Please apply in writing with full CV to S. G. Eagle, 276 Monument Road, Edgbaston, Birmingham B16 8XF.

MANSFIELD DISTRICT COUNCIL — DEPARTMENT OF FINANCE
Systems Administrator — Grade: SO1/SO2
(Scp 31-36) (£8190-£9528 p.a.)

The Authority is moving to a 'Stand Alone' situation involving the use of IBM 4331, DOS/VSE CICS/VS, DL/1 equipment and systems. A Systems Administrator is now required to manage the system software, control and administer the use of CICS and DL/1.
The person appointed will also be required to implement new applications and package solutions and in this regard experience and skills in systems analysis and COBOL programming are essential.
Application forms and job descriptions may be obtained from the undersigned and be returned to him not later than Monday 22nd March 1982.
Canvassing of any of the members of the Council or Committee, directly or indirectly, for any appointment will disqualify the candidate concerned.
Applicants should also disclose any relationship to a member or Senior Officer of the Council.
J. D. Ellsey, Head of Personnel and Management Services, Carr Bank, Mansfield, Notts.

Programmer — HALFORDS
c£6000 — Redditch

We are a leading retail chain, currently embarking upon a variety of projects using Database and TP techniques.
We are seeking to recruit a Programmer to be involved in on-line programming developments using COBOL and File tab, currently under George 3 but moving in the near future to VME-B.
You should have a minimum of three years relevant programming experience and be able to react to the demands of a responsible DP department.
A salary of c£6000 dependent on experience together with excellent working conditions, subsidised restaurant facilities and discount on company products is offered.
Please phone Lyn Illing, Personnel Officer, for an application form or Mike Mason, Programming Manager for further details, Halfords Ltd, Icknield Street Drive, Washford West, Redditch, Worcs. Tel: Redditch 27001.

Sales Personnel
£21000 + CAR (on quota — no upper limit) — Derby based

Evets Computers Limited, a member of the Evets Group of Companies, is looking for additional experienced sales personnel. The company is active in both the commercial and industrial areas of computing and has a wide range of software packages, developed for the DEC PDP11 range of computers already installed with reference sites.
Vacancies exist in four main market sectors:
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– Commercial micro-computer systems
– OEM sales of Evets' software to systems houses and distributors
– Industrial turnkey systems using mini-computers and microprocessors.
Successful applicants will be based in Derby but will be expected to support sales throughout the UK.
As the group expects rapid growth during 1982/83 additional executive positions (including some at board level) will arise and it is hoped that these will be filled by employees who have demonstrated their effectiveness within the company.
Only experienced computer sales personnel should apply, setting out clearly their successful track record and salary progression.
Applications in writing to Mr S. J. Haseldine, Evets Computers Limited, 123-126 Green Lane, Derby DE1 1RZ.

Applications are invited from both men and women

PER Professional & Executive Recruitment

OPPORTUNITIES IN THE MIDLANDS—3

Your Own ACAS Service!

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South Manchester c. £8,000
Unique opportunity for Analyst Programmer to take charge of systems from design to implementation with a small but go ahead department, sound COBOL required plus some exposure to analysis within any machine environment.

PROGRAMMERS
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2 Years COBOL ideally coupled with small Machine experience.

PROGRAMMER
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PROGRAMMERS
Manchester c. £6,500
1 year of ICL COBOL. Secure companies. Good prospects and fringe benefits.

PROGRAMMERS
Manchester +£8,000
Sound IBM COBOL to work on varying and interesting applications in a T.P. and Database environment.

PROGRAMMER ANALYST
Manchester c. £8,000
Ideal background for this position is experience of RPGIII. Programmer to be trained in RPGIII. Involvement within a challenging, enthusiastic and progressive department is assured, coupled with relocation assistance and BUPA.

For further information on these and many other vacancies in the North, please contact Marion Thomas on 061-833 9241 (9am–5.30pm) or 061-428 6369 (evenings and weekends) after March 7th.

ANALYST PROGRAMMER
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SYSTEMS ANALYST
Cheshire to £9,000
Sound experience as a Systems or business analyst is required in order to be considered for several positions within a stable and progressive company offering an IBM environment and excellent fringe benefits including full relocation package.

SYSTEMS ANALYST
Manchester to £9,500
Excellent opportunity for Systems Analyst with IBM experience to direct a team in the development of numerous interesting on-line applications. This company can offer a varied machine environment, secure prospects, and an enthusiastic and committed department.

SENIOR PROGRAMMERS
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Unique opportunity to join an expanding progressive national company and lead a Project Team on a variety of applications. COBOL essential.

ANALYSTS/PROJECT LEADERS
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A number of vacancies are available for highly experienced and motivated Analyst and Project leaders with ICL experience, who are interested in progressive challenging and rewarding positions.

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Wiltshire to £7,000
This ICL site requires programmers with a minimum of 2 years experience — excellent opportunity to move into analysis. B0828

PROGRAMMERS
West Midlands to £9,500
This well known organisation seeks Programmers with a minimum of 4 years ICL COBOL experience — excellent benefits. B0816

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West Midlands to £9,000
This Midlands based manufacturing company is currently seeking Programmers of varying levels. Retaining an IBM mainframe they are interested in applicants with a minimum of 2 years' programming experience. Although they use PL1 they will consider IBM COBOL applicants for the lower level positions. They offer involvement in mainframe mini, batch and on-line applications. B0656

PROGRAMMERS & ANALYSTS
West Midlands to £7,500
ICL 2960 installation requires applicants with a minimum of 2 years experience to work on a variety of applications — excellent prospects for advancement. B0825

PROGRAMMER
Wiltshire to £7,500
OPPORTUNITY TO MOVE IBM 3031 — although this international manufacturing Company retains IBM hardware they are prepared to consider applicants with a minimum of 2 years COBOL experience from other hardware backgrounds. They offer a variety of applications including online systems together with the opportunity to convert to IBM. B0812

SYSTEMS PROGRAMMERS
West Midlands to £12,000
We have several clients who are at present seeking Systems Programmers with experience of IBM, DOS/VS, DOS/VSE or MVS. Their sizes and activities are quite diverse, so if you are a Systems Programmer call us today. B0729

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Expanding Midlands based organisation seeks COBOL Programmers with a minimum of 2 years experience to work at their main UK site. They retain UNIVAC mainframe with a range of minis and are at present involved in a wide variety of new development work. They offer training on UNIVAC together with excellent promotional prospects. B0639

Birmingham
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For further information on these and many other vacancies in the Midlands and the West please contact Lorraine Taylor or Elaine Hessell on 021-643 8867.

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Our client seeks a self-reliant sales executive, to help build their organisation. You will need to work hard, in the field, and then build a team around your success. A full range of commercial application packages, plus tailor-made software is available. The hardware is provided by a highly reputable source, and demonstration and office facilities are impressive.
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Our client, a leading consultancy, has urgent need of IBM skills. In particular they seek IMS DC and/or DB experience, along with COBOL or PL/1.
If you can demonstrate a background in these areas and want to work within a company who have a strong commitment to the growth of their staffs' skills in technical and personal terms, this opportunity is for you.
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Please contact:
Mike Hessian 021-236 2929 (24 hrs)

S.R. RECRUITMENT
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Candidates should ideally have not less than ONE YEAR'S experience with substantial IMS involvement gained in either a Cobol or PL/1 installation. Knowledge of Assembler, JCL, CICS or TSO would be highly advantageous.

The income package is comprised of basic salary, standby allowance and bonus. Earnings are further enhanced by PAID OVERTIME. Relocation expenses will be forthcoming where appropriate.

To discuss this opportunity to further develop your career, please call Mike Wood quoting reference CW/304.

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Continued from P27 (CW wouldn't give us a full page)

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OPS MANAGER – London circa £10,000 + Benefits
A leading finance house is currently installing an IBM 4300 mainframe and is looking to recruit an Operations Manager to head up this new department. The successful candidate for this challenging new position will have at least 5 years experience in an IBM environment aligned with proved management skills.

OPERATIONS ANALYSTS – Saudi Arabia to £18,000 (net)
Our Client is one of the world's leading oil producers and is urgently looking to recruit operating system specialists to work in their massive computer complex based on the Arabian Gulf.
The successful candidates should have at least six years experience in a large IBM environment with special emphasis on network performance, facility planning and hardware and software evaluation.
They will be offered indefinite term contracts, initially on single status and a comprehensive benefits package which rates among the best in the Middle East.

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Punch VDU Ops . . . Speak to Sue on 01-402 7672
comcap 26 CHILWORTH STREET · LONDON W2 6DT · Tel. 01-723 4053 (24hr Service).
Group Offices in London · Rome · Stockholm · Milan · Frankfurt · Copenhagen · Zurich · Oslo

Project Management
£13,500-£17,000
Central London

Following a recent detailed examination of our business activity, and the role that Data Processing must play in satisfying corporate information processing requirements, we have identified a need for a further two Project Leaders.

We define project management as the ability to develop effective relationships with user management, to establish business and systems specifications and to control the execution of technical and systems development activities by teams of Designers, Analysts and Programmers.

The technical resource you will have at your disposal comprises IBM 3033, 370/158 and 4341, under MVS, with the planned installation of IBM 3081 in 1983. We currently utilise PL1, VTAM, DL1 and CICS, and are currently investigating IMS. A network of some 300 terminals brings this processing power and flexibility to our users, as will the installation of Point of Sale technology during the coming months.

Candidates for these two key posts must exhibit effective powers of communication at both managerial and technical levels. This will include demonstrable ability in the application of TP and Database technology to commercially orientated business and technical systems design.

Additionally, you must possess man management skills and a strong determination to see projects through to satisfactory completion.

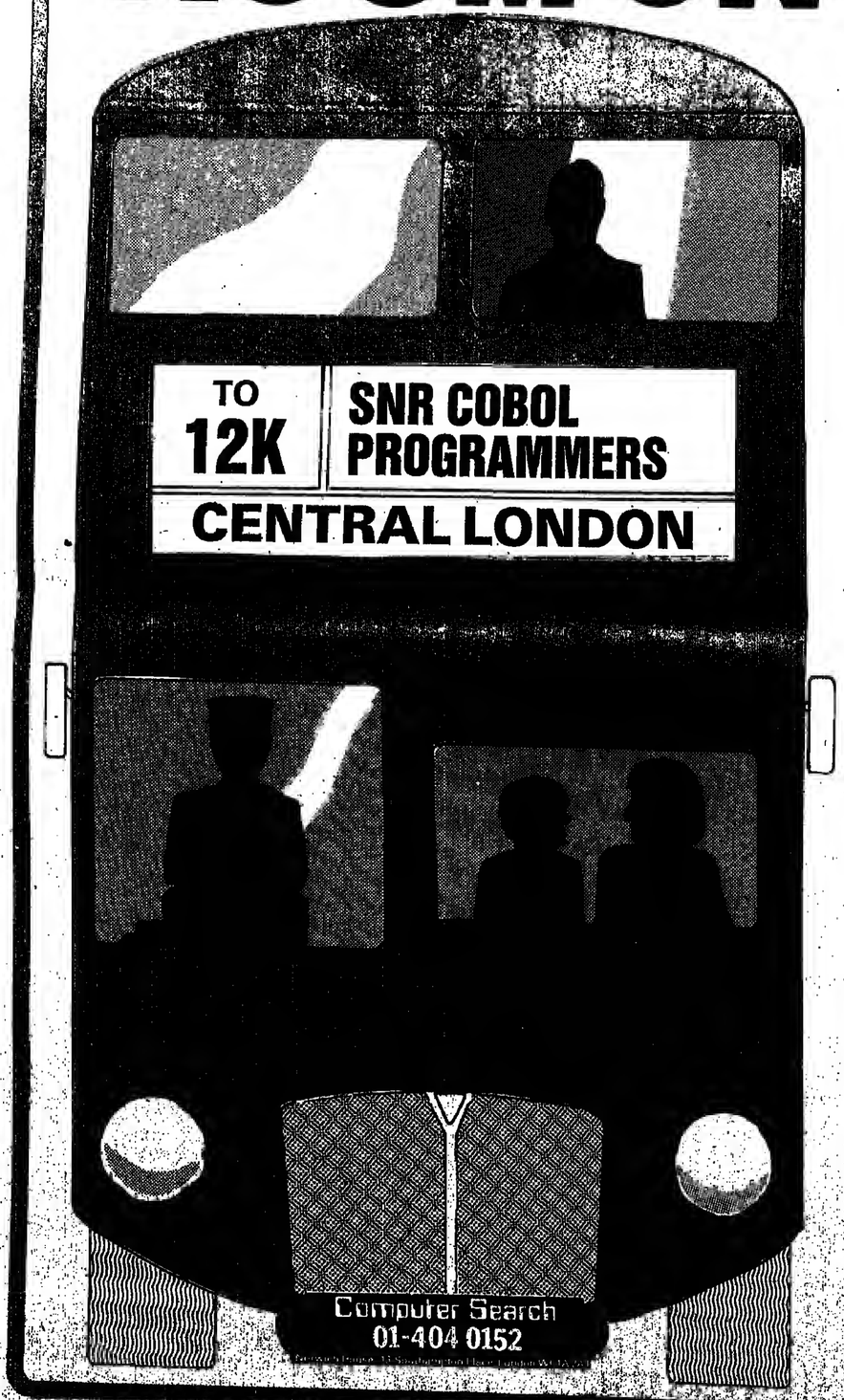
The salary range indicated above reflects our desire to accommodate potential as well as proven experience.

To arrange an initial interview, call our Advising Consultants Rex Ashcroft or Andrew Carter, on 01-935 0671 during working hours (24 hour answering service) or submit written Career History to our London address if you prefer.

SCR
Specialist Computer Recruitment Ltd

London 01-935 0671 James House, 46 James Street, London W1.
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY.
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA.
Brussels 010 322-646 7151/71 Avenue Louise 327, Boite 4, 1050 Bruxelles.
Amsterdam 010 3120-760947 Willemsparkweg 92, 1071 H.M. Amsterdam.

ROOM ON TOP



Climb aboard and you'll find this company's diversification of activities and career structuring just the ticket.

By following a policy of being totally committed to computerisation in all areas this nation-wide organisation is continuing to expand its network and range of applications in order to stay ahead of the field.

Your programming expertise and supervisory skills will be utilised to the full as you become totally involved with this expansion. You'll also be encouraged to show the potential of future project managers.

If you match the following requirements contact GORDON THOMPSON quoting AP 2612 for an early interview.

- ★ 3-5 years' programming experience
- ★ ICL mainframe background
- ★ Cobol expertise
- ★ Management aspirations

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Analysts should have at least five years experience, gained in either the insurance or Financial sectors. The role will entail development of complex new systems from feasibility to implementation.

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The current hardware configuration is based on an IBM 3032, running under MVS/SP. In June the company will be taking delivery of an IBM 3081. The database is IDMS, and extensive use is made of CICS, TSO and the latest Wang word processing equipment. Applicants should ideally be working in a similar DP environment.

Willis Faber have their central systems division in Ipswich where their multi-award winning offices will provide you with ideal working conditions. Successful candidates will receive an excellent benefits package. In addition, house prices are reasonable and the company will give very generous help towards your relocation expenses.

If you want to leave the chaff behind, and feel you are able to make a positive contribution to this dynamic and highly successful company, ring 01-439 8591 today. Alternatively, return the coupon below and by return we will send you an Application Form and Company Profile.

Initial interviews can be conducted up to 8.00p.m. each evening, or on Saturday mornings by appointment.

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Recruitment Consultants

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First names
Full address
Position applied for
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Contact: Vic Chivers

Please telephone for a confidential information discussion, either our office; or at home, evenings/weekends:

Don Knagga	0299 400077
Jeff Bowman	0905 67457
Vic Chivers	0905 353246

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As a result of continuing growth in computer services we need to recruit 2 more staff in our Systems Support Group, based at the South Eastern Region Headquarters of the Central Electricity Generating Board.
The group has three main disciplines:

i) Supporting centralised operating systems software on two ICL 2960 mainframes.
ii) Installing and maintaining distributed software running on computers and terminals at major locations in the Region.
iii) Planning the introduction of new applications into the Operations environment.

We operate VME/B, DME/George 3, Batch, MAC, RJE and TP on the mainframes; TME, TPS and Bulletin on ICL ME29s and a large support network of mini-computers, terminals and word processors. Continuing growth of computing will probably take us into new hardware regimes by the end of the year.

With all this we need assistance to support the extra workload generated by TP and distributed systems and can offer you the opportunity to develop your technical skills. There is a high level of job satisfaction through involvement with a group of people who want to provide a good service to users of the Computing Branch.
Applicants should have 'A' level in at least one of the sciences or an HNC. You will have to demonstrate your aptitude for this kind of work and be able to communicate clearly with both technicians and laymen. Mobility is important at senior levels as a driving licence is an advantage.

If you feel this is a job to match your ambition and potential then ring Derek Johnson on 01-261 2327 for further details, or write with full career and personal details to The Personnel Officer (Recruitment), CEGB (South Eastern Region), Bankside House, Sumner Street, London SE1, quoting Vacancy Number 1021/82/CW to arrive by **22 March 1982.**

Central Electricity Generating Board
SE Region

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PROGRAMMERS Cobol/Hewlett Packard/Applications exp	to £12K Lancashire
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SENIOR SYSTEMS ANALYSTS Commercial Experience	to £14K Bucks.
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TECHNICAL SUPPORT	to £13K
SENIOR SYSTEMS PROGRAMMERS OCS/CICS/Teleprocessing	to £13K London/Home Counties
PROJECT MANAGER Commercial Experience	to £14K Bucks.
FIELD SERVICE ENGINEERS Mainframe/Minis/Peripherals	to £10K Nationwide
PROGRAMMERS Cobol/Assembler/IBM 3032	to £10K Surrey
ANALYST Visonik/Colbes	to £12K Acton
SOFTWARE ENGINEERS Fortran/Pascal	to £12K Herts/Surrey
ANALYSTS 2 years' experience + RPG 11	to £14K London/Home Counties
CONSULTANTS Banking/Insurance	to £20K Surrey/Berks/London
SENIOR PROJECT ENGINEER Peripherals/Industrial contracts	to £15K North London
PROGRAMMERS Cobol/IBM 3031/Commercial exp.	to £9K Leicestershire
PROGRAMMERS Cobol/Commercial	to £13K London
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On-Line Order Processing System

This is the key element in maintaining our market competitiveness. The Order Processing system will need to support same-day despatch of short-life products to oversees customers and generate critical information for production and marketing activities.

Both projects present exciting challenges for the right candidates who must have:
— advanced Project Management skills gained on large projects
— awareness of the commercial implications of such projects in a competitive environment
— substantial experience to realise an integrated company data base
— a strong background in distributed processing (the present network is based on ICL and HP equipment)

The company offers an attractive and stimulating environment with excellent conditions (including relocation help where needed). These appointments are open to men and women.
If you feel that you have the experience and drive required, please telephone Little Chalfont (02404) 4444 Ext 3569 or write with full career details to P. L. Jones, Personnel Manager, at the address below:

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Amersham

(8700)

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For further information please contact Mike Oakes.

(8744)

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Targa

SURREY **PROGRAMMERS** **TO £11,000**

Our Clients require a number of good IBM COBOL programmers for their Commercial Applications Group. They are able to offer candidates with upwards of 18 months experience opportunities for career development but would also be interested in people with previous exposure to leading more junior staff. A leading manufacturing concern, the company is able to offer superb office accommodation and an excellent benefits package that includes assistance with house purchase in some cases.

Ref. B3582

W. LONDON **SENIOR PROGRAMMER** **£11,000 + Mortgage**

A subsidiary of a major American Banking Corporation require a senior programmer to join their very active systems group. A commercial background including the use of any high-level language such as COBOL, PL/1 or FORTRAN is necessary in order to assist development of an on-line system catering for the credit facilities offered by a number of well known retail outlets. Usual banking benefits including MORTGAGE are offered.

Ref. B3849

CENTRAL LONDON **ANALYSTS AND PROGRAMMERS** **£8,000 to £13,000**

RPG II or RPG III Programmers and Analyst Programmers are needed by a leading Software House that specialises in systems based on the IBM S34 and S38. This company are looking for bright, personable people with the right technical background and offer quick advancement and excellent fringe benefits including paid overtime, BUPA, annual profit related bonus and all travelling expenses.

Ref. B.3259

KENT **SENIOR PROGRAMMER** **c. £10,000**

A Senior Programmer with around four years COBOL experience including IBM IMS exposure is required for our clients, an internationally known company based in Kent. Developing applications such as inventory control, Payroll and forecasting this organisation are also looking for a PROGRAMMER with around 2 years experience and offer an excellent benefits package including relocation.

Ref. R3809

CITY **ANALYST/PROGRAMMER** **TO £10,000 + MORTGAGE**

A leading City Merchant Bank has a requirement in one of its subsidiaries for an experienced COBOL Analyst/Programmer. Self-motivation and the ability to lead a small but growing team, together with the personality to liaise with non-technical staff at all levels is desired. Excellent career prospects are offered by this ground-floor opportunity.

Ref. RC3868

E. LONDON **ANALYST PROGRAMMERS** **c. £12,000 PACKAGE**

There are opportunities within a highly successful company operating in the financial sector for Analyst Programmers. Strong IBM COBOL or ASSEMBLER is required, preferably with a knowledge of the second languages. Applications are developed in a DOS/VSE environment using CICS and exposure to this software would be advantageous but not essential. First class conditions of employment and benefits package are offered.

Ref. R3873

CITY **ANALYST/PROGRAMMER** **TO £12,000 + MORTGAGE**

Expansion of a major International Bank's EDP team affords an exciting opportunity for Analyst/Programmers with at least 3 years experience in banking, financial or commercial applications. The work involves implementation and development of systems, both in the UK and abroad on PDP11 and VAX machines, therefore a background which includes Basic or a similar type language working with large 'mini' computers is desirable.

Ref. C3818

CITY **SYSTEMS ANALYSTS** **TO £11,500 + MORTGAGE**

Two of our clients, both in the insurance industry, have requirements for Analysts at differing levels. For the senior post at least 4 years analysis and systems design within an ICL environment is required, the second position's requirement is for 2 years plus analysis with ICL VME knowledge. In both cases a financial applications background is desirable. These positions carry very attractive benefits packages which include Mortgage subsidies and Bonus schemes.

Ref. C3814

CITY **ANALYST/PROGRAMMERS** **£8,000 – £12,000**

Vacancies occur at various levels for persons with good BASIC, BASIC + FORTRAN or similar programming backgrounds to join a rapidly expanding Systems House and Consultancy. Excellent careers are available in either development of support roles working with Banking Systems, Data Communications or Message Switching applications in London and abroad. An attractive salary range, reviewed at 6 monthly intervals is supplemented by a generous company benefits package.

Ref. C3488

ESSEX/HERTS **PROGRAMMERS** **c. £9,500**

Our Client, heavily committed to the implementation of new systems involving manufacturing and associated applications, has a requirement for Programmers and Senior Programmers for their development team. A sound ICL COBOL background is desired, with knowledge of FILETAB, a distinct advantage. As well as an excellent salary, related to experience, an exceptional benefits package applies, which can in certain circumstances include relocation.

Ref. C3399

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(8719)

JBA

IBM Systems Software Specialists
Brussels **Package c.£22,000**

Our client is a well known international "high technology" organisation. SOFTWARE SPECIALISTS are now being sought to assist in the development of new purpose built software tools to be used by their organisation throughout the world.
Applicants must be good technicians with experience of large IBM mainframe systems software or middleware, and the ability to conceive, design and develop new products. Candidates must also be "good communicators," willing to travel and have the personal qualities to secure co-operation from other people.

Contact: Bev Stevens in Birmingham

IBM GSD Consultants
£8,000 + Escort to £11,500 + 2 ltr Capri

An international software organisation specialising in IBM GSD support is seeking people of the right calibre to become consultants.
Candidates should be familiar with RPG II and have sufficient experience with IBM System 3, 34 or 38. Length of GSD experience is unimportant because the main objective is to find "quality" people who can be successful in the computer service industry.

Contact: Bev Stevens in Birmingham

IBM System 34 Analyst/Programmer
Near Cambridge **c.£8,750**

An experienced RPG II Analyst/Programmer is urgently required to support our clients' System 34 installation based in Newmarket, Suffolk. Reporting to the Financial Director he/she will be responsible for the day to day management of the D.P. function, for maintaining and enhancing current systems and developing new systems as required. Applicants should have at least 1 years' relevant experience, preferably in an industrial environment (although not essential), and be self-motivated individuals. Relocation is available if appropriate.

Contact: Tony Staples in London

Analyst/Programmers
West London **to £11,000**

Our client, a leading software house, is looking to increase their market growth considerably during the next twelve months. They wish to recruit Programmers and Analyst/Programmers from junior to senior level to join a wide variety of project teams whose assignments range from commercial to manufacturing systems.
The excellent promotion prospects are based entirely on merit and you will be given comprehensive training whenever necessary. These opportunities are open to applicants with a minimum of 1 years' IBM COBOL experience on OS or DOS systems.

Contact: Tony Cox in London

Management Opportunity
London **£Negotiable**

Our client is a commodity trader based in the city of London, and part of an international merchant bank.
Recent installation of a mini computer has created the need for an experienced Analyst/Programmer with at least 3 years' COBOL to take full responsibility for systems development and technical support.
An excellent salary will be paid together with a benefits package available only in a banking corporation.

Contact: Arthur Sandell in London

Analyst/Programmers
(mini computer applications)
London **neg to £11,000**

Our client, a well established and expanding consultancy organisation is engaged in the development of new projects utilising WANG equipment. They are developing and marketing a range of applications software including financial, accounting and order processing systems. Analyst/Programmers and Programmers are required, ideally with Wang, DEC, Honeywell or IBM minicomputer experience. Preferred languages are BASIC and/or COBOL but for candidates of the right calibre other languages or small machine experience is acceptable.
A minimum of two years' systems/programming experience is required and good communicative skills are essential.

Contact: Margaret Stevens in London

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The Financial Times newspaper is in the process of computerising its accounting function on a PDP 11/70 configuration.

This has created an opening for an experienced Project Leader to control a small team of analysts and programmers in the analysis, design, implementation and modification of computer systems.

We are looking for a computing professional with good systems experience and preferably with a knowledge of accounting procedures, capable of meneging all aspects of a project from feesibility through implementetion and forward planning.

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Preference will be given to the candidate having these qualifications:
☐ several years of professional experience in the maintenance of the system softwers for large computing installations, possibly as head of a team; ☐ proven skill and experiance in the management of technical experts.

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Preference will be given to the candidate having these qualifications: ☐ additional education in informatics; ☐ good knowledge of the general structure of modern operating systems; ☐ experience in the maintenance of system software; ☐ the ability to work within a team.
A thorough knowledge of one Community language and a satisfactory knowledge of one other Community language, are also required.

Recruitment criteria, based on the staff regulations and salary scale applicable to temporary agents of the European Communities:
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Bermuda is a semi-tropical island 600 miles east of North America, in the Gulf Stream ensuring a temperate climate with summer temperatures from May to November. The environment offers an attractive way of life with many leisure and sporting activities readily available. A single person is preferred, a married person without children would be considered, and the appointment is subject to the issue of an annual work permit.
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SOFTWARE SPECIALISTS

Back in 1957, the Digital story began as a three man and one logic module operation. Today, in our 25th year, we have grown rapidly to lead the world in the design, manufacture and marketing of interactive computer systems.

We are still enjoying tremendous growth in all areas of our worldwide organisation — and the software side of our UK operation is no exception. That's why we're now looking for at least four talented Software Specialists to join us in either Bristol or Basingstoke.

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For both locations, the common responsibility will be to provide a high level of software support to both new and existing customers. To be more specific, we need Software Specialists to join us in Basingstoke and Bristol to work in tandem with our sales team advising on the suitability of DEC products and assisting in demonstrations and presentations. Software Specialists are also required at both locations to provide installation and post-sales support; and again in Basingstoke, another Software Specialist to work in our telephone support function analysing systems faults and advising our customers' software personnel.

To meet the many challenges of any one of these equally rewarding positions, you must be a mature and creative professional, aged 23-35 with a University or College education with more than 2 years' relevant experience — ideally gained on DEC operating systems or hardware. You'll also need a full driving licence and good all round communication skills. A successful background in either a product support or a pre-sales environment would be an advantage.

REGIONAL LOCATIONS FOR...

If you're one of the men or women we're looking for, you can expect excellent rewards with Digital. In all cases, we offer attractive initial salaries together with a full range of valuable fringe benefits — including relocation expenses, where appropriate. And as you would expect from an expanding international organisation, the career prospects for the determined and ambitious are excellent.

So if you're an ambitious Software Specialist looking for more challenge, more responsibility and better rewards, ring us NOW on one of these numbers below. Alternatively, please write with full personal and career details to Tim Pedder at Digital Equipment Co. Limited, Wimgrove House, Basing View, Basingstoke RG21 2UR. Ref: SW/417.

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digital

EMJAY COMPUTER SERVICES

SNR PROGRAMMER COBOL £9,500
Do you have two years' solid programming experience using DOS and COBOL? Our client, in the field of finance, needs a senior programmer to look after the design through to implementation of various new projects which are in the analysis stage. CICS and DLI experience would be an asset, but our client would be prepared to TRAIN IN CICS if necessary. This position provides a unique opportunity. There is also a good benefits package including flexi-time.

BASIC + ANALYSTS/SYSTEM DESIGNER c.£11,000
This forward thinking company has assessed its future requirements, and wants two systems analysts to head two new development teams. To qualify for these positions you must have at least one year's analysis experience in a commercial environment. A Systems Designer is also required with about eighteen months' design experience with a programming background.

PROGRAMMER to £11,500
This multinational organisation with offices in all the world capitals, are currently enhancing their software development teams, and to this end they require RPGII programmers with a minimum of 2 years' experience, preferably in a financial environment. The successful applicant will receive an excellent remuneration coupled with an extensive benefits package which includes a subsidised house purchase scheme.

PLI PROGRAMMER c.£8,000
Recession! Not for this company. During the past two years the volume of business and the profit has boomed. To enable them to keep up with the demands made on their software teams, they require PLI programmers with a minimum of two years' experience. They have a large communications network, and for those successful applicants who have not had the exposure to Comms, full training will be given. There is a full range of fringe benefits including B.T.L. and a subsidised restaurant.

FORTRAN PROGRAMMER to £12,000
Are you a commercial FORTRAN programmer? Our clients, a financial organisation, requires your expertise. You should have at least two years' FORTRAN on commercial applications, preferably with an Assembler language, although this is not essential. This is an outstanding opportunity to move into a progressive environment, where hard work is rewarded with promotion into analysis and management. The company offer good benefits coupled to an excellent starting salary.
Interested? Of course you are. CALL US NOW.

PROGRAMMER c.£7,500
Do you know BASIC +? If you have a minimum of one year's solid commercial programming experience using Basic +, then this international company is for you. The hardware comprises two mid-range PDP 11's using RSTS/E. Applications are varied and they require a person who can handle all and they require a person who can handle all the spheres of commercial applications. The company is offering an excellent salary, good promotion prospects and a very stimulating and progressive environment.

Call Harvey Kaye or Lynda Abi

EMJAY COMPUTER SERVICES Recruitment Consultants

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27 Chancery Lane, London W.C.2
01-242 0078 01-404 4304

(6616)

Systems Support Manager

Use your technical expertise and commercial flair to develop a remote access network

One of the country's most successful computer bureaux, our client is engaged in an ambitious strategy of investment-led new product development. Of key importance is their plan to develop an advanced remote access network based on large ICL 2900 mainframes with distributed processors at regional centres around the UK.
This exciting development is already well in hand and has now created an immediate need for an experienced Systems Support Manager to make a vital contribution towards its continued growth and success. The network provides an entirely new level of customer service and represents a considerable challenge to all involved.
Reporting direct to the Production Sector Manager and leading a high calibre support team, your responsibility in this important role will be to provide a consistently high level of customer, operating and production support. In addition, you will back up sales personnel in their dealings with customers and will therefore keep abreast of all the latest hardware developments.
The exceptional man or woman our client seeks will demonstrate a thorough knowledge of operating and communications systems based on at least ten years' good DP experience. A background in project management, preferably in a commercial environment, is highly desirable. A good all-round communicator, you must be strongly self-motivated with a high degree of business awareness.
The remuneration package consists of a competitive salary of around £13,000 p.a., depending on your qualifications and experience, participation in an attractive management bonus scheme, and a valuable range of large company benefits. And as a forward thinking organisation with an active policy of expansion they can offer you very real career progress.
So, if you have the flair to meet this exciting challenge, please write with full career and personal details, quoting ref: RW/982/CW to Richard Wareham, Moxon Dolphin & Kerby Ltd., 178-202 Great Portland Street, London W1N 6TB, or telephone him on 01-637 3289. Replies will be forwarded direct to our client. Please list in a seperate note any companies to whom you do not wish your application sent.

MOXON DOLPHIN & KERBY LTD

FOR CLASSIFIED ADVERTISING USE

DIRECT LINE 01-661 0121

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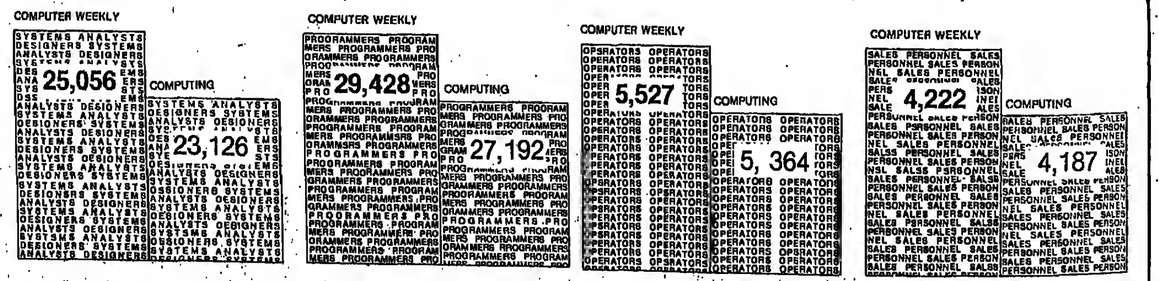

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Computer Weekly made significant strides ahead in its circulation level during 1981 and now stands at 100,166 ABC July-Dec. More important than the overall circulation is the level of personally requested copies. This has reached the exceptionally high figure of 99.7% — *a claim no other computer journal can match.* This achievement proves conclusively the high regard computer people have for Computer Weekly.

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R&D and CUSTOMER LIAISON STAFF

FEELING BLUE....

Try ABS COMPUTERS

... Let down? Is the recession getting to you? Why not add the excitement of working for a fast moving dynamic computer company.

WE ARE LOOKING FOR:-
- Research & Development Engineers
- Project Leaders
- Senior Systems Programmers
- Programmers
- Junior Programmers

to work out of our very modern Brighton office complex
Experience required on design/development of mini and micro systems, in particular on 8080/280 and 8085/86 Systems for the more senior positions. At junior level, a reasonable degree of experience with assembler languages is required.
Communications experience would be advantageous.
Projects include:-
High Level Language Development
Communications and Networking
Automated Office Systems
File Processors

WE ARE ALSO LOOKING FOR:-
- A Project Manager for both our Rugby and Maple Cross locations
- Project Controllers (throughout the U.K.)
- Post Sales Analysts (throughout the U.K.)
- Programmer - experienced in Micro

Processors with at least one year's experience in Assembler Programming to work on a new and exciting range of micro based products in Brighton

We offer the normal benefits associated with a national company together with more than competitive remuneration.

PLEASE CALL: Miss LINDA SIMPSON on Brighton (0273) 413211 to find out more about these exciting opportunities or write with your C.V. to Miss Simpson.

[8887]

A&S Computers Limited
North Street,
Portslade,
Sussex, BN4 1ER.

ABS COMPUTERS

JOIN THE MARKET LEADERS

Due to rapidly expanding business opportunities, we are looking to increase our expertise and the service we offer to our clients in Europe. We thus require the following additional staff:

EUROPEAN SUPPORT REPRESENTATIVE

You will lend your skills to the support of an established European distributor network for our range of communications storage devices. A hardware background, experience in communications and in both pre-sales and post-sales environments is essential. You will need to be disciplined in your approach and be self-motivating. The ability to speak a foreign language would be advantageous.

SOFTWARE DESIGNERS

These are two senior appointments, one of which will be as the assistant to the present European Software Manager. Candidates will bring to these positions their experience on 6502/6809 design, as well as micro-processor applications. Experience at both Assembler and high level.

Successful candidates can expect a five figure salary and good fringe benefits.

Please apply in writing, enclosing a c.v. to:

SYKES DATATRONICS LTD
REGAL HOUSE
LONDON ROAD
TWICKENHAM
MIDDLESEX TW1 3QT

[8712]

Microcomputer/Word Processing Towards Sales Management

£14-18K + Potential with basic & car

Our Client is a sales and marketing oriented business computer system company who have from scratch in the last two and a half years created a turnover in excess of £1.6M. Professionally managed, they are dealers and agents for a number of highly successful hardware and software products aimed at solving small business users' problems.

There are two requirements, the first for Sales Professionals who must be self-motivated, professional salesmen with ambition to run their own branch. Not necessarily having a computer sales background but being able to demonstrate the ability to generate their own marketing action. Strong on empathy and drive. Areas: Norwich, Cambridge and South Essex.

A Product Development Manager

The Second a Product Development Manager who will ideally have software selling/marketing experience and be creative and pragmatic in his/her marketing approach, coming from a computing or allied background. Market sympathetic, able to evaluate new programmes and select and prepare product launches based on sound research. Then orchestrate the launch, conduct dealer training, organise all associated marketing action and material. Based Colchester.

We have prepared comprehensive job specifications and client profile which we shall be pleased to send to suitably experienced candidates. In the first instance, please phone David Anderson on 01-524 1044 quoting reference 472F or 473F respectively or write in confidence to Trojan Engineering Services, Forest House, 166-168 Station Road, Chingford, London E4 6AN.

Trojan Advertising
Recruitment Selection Consultants

TECHNICAL SERVICES MANAGER

Central London
£11-£16,000 + Benefits

IBM MVS OPERATIONS ENVIRONMENT

Our client is a major financial company utilising IBM 4341 mainframe and large communications network. The vacancy is a newly created position which would be of interest to a person of broad technical background within IBM Operations Support, Networking, and/or Systems Programming.

The person required will be responsible for supervising and co-ordinating the work of the above three departments, each of which is led by its own manager or supervisor. While it is envisaged that applicants will have a wide range of operational and software support experience, managerial ability is a key consideration. The Technical Services Manager will be expected to develop the area for which he/she is responsible so as to provide an increasingly sophisticated service to the company's computer developments and operational systems. It is likely that the person required will be aged 30-45 and have at least 8 years' relevant experience.

Conditions of employment and benefits are excellent including 28 Days' Holiday, Non-Contributory Pension, Restaurant, Family BUPA Membership. After a qualifying period, there is an Annual Bonus and Staff Mortgage Scheme.

To apply or for further details please contact SIMON BERRY or JASMINE DAINES in strictest confidence.

[8892]

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EXCELLENT CONTRACTING OPPORTUNITIES

Our immediate domestic and international consulting needs are detailed below. If you are of a professional disposition, skilled and dedicated, and wish to join our growing permanent or contract staff, please contact us in respect of these and future opportunities:

INTERNATIONAL		
RPG III, S38	Programmer/Analysts	New York
COBOL, CICS and/or DL/1	Programmer/Analysts	USA
COBOL, OS	Programmer/Analysts	New York
RPG II, S34, fluent French	Programmer/Analyst	West Africa
FOCUS	Programmers	New York
ADABAS	Analyst/Programmer	New York
UK		
COBOL, IMS DB	Designer/Analyst	Home Counties
Redifon, EDITOR	Programmer/Analysts	Scotland
	Banking Analyst	Home Counties
RPG III, S38	Programmer/Analyst	London
COBOL, Univac 1100 ICL 1900	Programmers	Essex
ADABAS, Natural	Designer, Analyst/Programmer	London
VM/CMS	Systems Programmers	Home Counties

For more information please contact:

Tangent

Resources Department
TANGENT COMPUTER SERVICES
102/106 South Street
Romford
Essex
Tel: Romford (0708) 750201
(24 hour answering service)

[8757]

D.P. OPPORTUNITIES
NORTHERN HOME COUNTIES – EAST ANGLIA
(0279) 506464

IBM COBOL Programmer (2 yrs.+)	£8,000+
Analyst/Programmer (3 yrs. DEC/ASSEMBLER)	to £11,000
Senior ICL/COBOL Programmer	c£8,500
Senior Analyst /Design on IBM System 34)	c£12,000
Systems Programmer (IBM VSE/VSAM/CICS)	to £11,000
ICL COBOL Programmer (6 months+)	£6,500+
Senior Programmer/Analyst (2 yrs. COBOL+FILETAB)	£8,500+
Field Service Engineer (DEC exp.)	to £8,500+car+benefits
O & M Analyst (3 yrs. exp.)	to £9,500
Senior Programmer (5 yrs COBOL + CICS)	to £9,500
Senior Analyst (in depth; ideally ICL)	£ neg
Field Service Engineers (2 yrs. exp. minis & micros)	to £10,000 to £7,500+car

To discuss these and other opportunities please telephone your local office 9 a.m. to 6 p.m. out of hours answering service

Bishop's Stortford 0279-506464

ata COMPUTER RECRUITMENT

Computer Operators

London W.1.
£7,000+15% shift bonus

The company is a major employment agency operating Twin Honeywell 64DPS4 computers running TDS on-line systems with possibly the largest communications network in the U.K. on this type of machine.

Applicants should be in their early 20's, educated to 'O' level standard or higher and having two to three years computer operating experience including at least 6 months on Honeywell 64DPS systems under GCOS 1D.

Sterling salary £7,000 plus 15% shift bonus.

Please apply, enclosing details of career to date, to Mrs Joan Lindh, Alfred Marks Bureau, Adia House, 84/86 Regent Street, London W1R 5PA

(8711)

ALFRED MARKS BUREAU

ANALYST/PROGRAMMER

READING, BERKSHIRE

Inter Innovation a leading Swedish manufacturer of banking systems is currently in an expansion phase and are seeking an Analyst/Programmer to take care of the rapid growth in our systems business.

The person appointed will have project responsibility from inception through feasibility analysis, specification, programming, testing documentation to implementation.

Applicants male or female, should possess a degree/HNC plus at least 3 years' experience in banking or a related systems area.

We offer a competitive salary, first class conditions of employment in a dynamic environment.

If you feel you have the right qualifications and would like to work in this challenging field please write with career details to:

Mr. L. J. Bhardlow
Inter Innovation Limited
84 Oxford Road
Reading, Berkshire

INTER INNOVATION

(8730)

Commercial Systems Analyst/Programmer

Progressive Environment
West Country **£8/9,000**

Independent Chemists Marketing is responsible for the development and maintenance of a wide range of services for UK retail and wholesale chemists including advanced computer systems. We now need to expand our team based in Warminster by appointing an Analyst/Programmer who will have the opportunity of working on a number of challenging projects including point-of-sale and microcomputer applications.

The successful applicant will have general systems experience and knowledge of COBOL, and will be prepared to undertake responsibility for all aspects of a project.

Age and specific machine experience are less important than ability and commitment. An attractive salary is offered, together with relocation assistance where necessary, and other benefits.

Please write, giving brief details of experience and qualifications to:

The Company Secretary
Independent Chemists Marketing Ltd
51 Boreham Road
Warminster
Wilts BA12 9JU
Tel: 0985 215555

NUMARK CHEMIST

(8687)

IATA

AIRLINE INDUSTRY DATA PROCESSING

PROJECT LEADER

Geneva-based international organisation seeks DP professional with extensive data processing experience in the area of international airline tariffs data to supervise team responsible for all systems related to the processing of fares, rates and mileages information.

Candidate must have a minimum of six years' programming/analysis experience and be fully familiar with all aspects of the appropriate application areas. Thorough knowledge of FORTRAN and COBOL in IBM OS or UNIVAC 1100 environment is required. Must be able to communicate with users and DP staff at all levels. Previous experience in a supervisory position would be an asset.

This position offers a unique opportunity for a person with an interest in this area to play a major role in the provision of tariffs data to the airline industry.

Interviews will be conducted in London week of March 22.

Detailed curriculum vitae should be received at the following address no later than March 19.

International Air Transport Association
Greener House
66/68 Haymarket
London SW1Y 4RF

(8769)

UMIST

MICROELECTRONICS APPLICATIONS UNIT (MAU)
PROGRAMMING COURSES
MICROPROCESSOR SOFTWARE DESIGN COURSE
6 and 7 APRIL, 1982 (Course Ref. C0074/13)

A 2-day Course for Engineers and Programmers

This new course is configured for the engineer and/or programmer who already uses microprocessor systems and who wishes to improve his/her software design methods. The course consists of a series of lectures covering the various aspects of microprocessor software design with particular emphasis on program design, which is explained through the use of a problem orientated PASCAL-like notation. No previous knowledge of PASCAL is assumed.

Cost, including lunches and refreshments, is £160.

For further details contact:

The Registrar (Special Courses), UMIST, P.O. Box 88, Sackville Street, Manchester M60 1QD. Tel: 061-236 3311, Ext. 2713, Telex: 666094.

(8691)

TAMESIDE METROPOLITAN BOROUGH
COMPUTER DEPARTMENT

An ICL 2956 Computer has recently been installed running under DME/GEORGE 3, shortly to be replaced by an ICL 2988 under CME. The Authority has an extensive computer development plan.

To implement this and assist in conversion to VME we require:

(A) **2 SYSTEMS ANALYST/PROGRAMMERS**
(New Posts) £8891–£9993 p.a.
At least 3 years' COBOL programming and one year's experience in Systems Analysis.

(B) **1 SENIOR PROGRAMMER**
£7371–£9528 p.a. according to experience.
At least three years' COBOL programming.

Candidates must also have extensive experience of either GEORGE 3 or VME operating systems.

Application forms and further details from Chief Personnel Officer, Council Offices, Wellington Road, Ashton-under-Lyne, Greater Manchester OL6 6DL to be returned by the 15th March, 1982.

(8806)

TOP RATES

UNIVAC COBOL DMS/TIP	(APRIL)
VAX FORTRAN	(NOW)
UNIVAC 1100 FORTRAN	(NOW)
VM, MVS, CICS, IMS, SYS, PROGS.	(MAR/APR)
BASIS DATABASE	(NOW)
APL PROGRAMMERS	(NOW)
HIGH LEVEL DATABASE OR COMMUNICATIONS CONSULTANTS	(MAY, JUNE, JULY, STARTS)
UTS 400 PROGRAMMER	(NOW)
UNIVAC 90/30 COBOL/IMS	(MAY)
OS/VS1 SYS. PROG.	(NOW)

MONTREAL ASSOCIATES SYSTEMS
01-553 2944 (4 lines) Emp Agy.

(8750)

UK SERVICE ENGINEERING MANAGER

We are an expanding systems company with a growing number of Apple Micros, terminal, printers and hard disk based installations in the field.

If you are an experienced Service Engineer capable of establishing a Hardware Support function and located ideally in the Swindon or Reading areas we would like to hear from you. Some Software knowledge would be an additional plus. Attractive salary and benefits package.

Please apply to: DAVID BAKER, TDI RECRUITMENT, 29 ALMA VALE ROAD, CLIFTON, BRISTOL BS8 2HL on 0272 742796.

(8666)

CONTRACTS

Middle East. Tax free +bonus and benefits*

UK contracts also available

We have contract positions open with our clients now and additional people will be needed throughout 1982. Contact us now to register. Current vacancies are for people with extensive IBM Experience.

Programmers+ Analyst Programmers

MARK IV – Financial Systems
PL1 and COBOL – Experience of Payroll+TSO/SPF and JCL
MARK IV – Industrial Systems, knowledge of Data Base + Utilities
FORTRAN – For Engineering applications, knowledge of MVS.
PL1 and COBOL – Material Supply Systems using IMS.

Business Analysts

People with substantial experience as Business Analysts are required for the UK and Saudi Arabia. Applications include: Housing Management Systems, Transportation Systems and Material Supply Systems. Experience of both batch and on-line systems required.

Also required

Instructors, Software Librarian, Systems Programmers and Change Control Analysts

For most positions we will require at least three years relevant experience.
Middle East contract benefits include:

* Five-day working week
* Excellent recreational facilities
* Regular return flights
* Overtime payments
* Meal allowances
* Free accommodation etc.

PERMANENT UK Management Consultants required for Central London location with ability to communicate at a very senior level. Five figure salary.
We also have current requirements for permanent staff to work in the Essex area.

Contact Mike Mead at
International and Middle East
Recruitment Specialists,
Princess Caroline House,
1 High Street, Southend-on-sea,
Essex SS1 1JE.
or telephone Southend-on-Sea (0702) 333516
(24-hr answering service).

IMERS

MVS Systems Programmer

Holland **£2500/month**

A senior MVS Systems Programmer, with good communications skills, is required initially for 1 year to act in a senior adviser/technical support role with a client running multiple CPUs with MVS SP1, MSNF, ACF/VTAM and an in-house DB/DC facilities. Whilst participating in all activities, emphasis will be on planning, performance, problem resolving and training.
8001

COBOL/BAL/CICS

Brussels **£2100/month**

A Programmer with at least 3 years experience, is required, initially for 3 months, to tailor a financial package to a clients requirements and then assist with implementation and testing. Applicants should have a solid experience of COBOL and either macro-level CICS or command-level CICS with Assembler. A knowledge of DOS/VSE or VM/CMS would be an advantage.
J002

cds **IBM Systems Programming and DB/DC Specialists**

CDS is an Anglo-Swiss Consultancy specialising in systems programming and DB/DC application development. *For further details of the above positions or for an informal discussion on future European or UK assignments please contact Mike Shine at our UK offices or on 0276 61808 during evenings/weekends.*
CDS Limited, 67–73 Park Street, Camberley, Surrey GU15 3PE. Tel. 0276 25845 Telex 858062

(8626)

Systems Analyst

NORWICH

Nacanco Ltd is the U.K. subsidiary of the National Can Corporation of Chicago, U.S.A. We have recently installed an IBM 4341 computer which includes a telecommunications network and uses VM/CMS and OS/VS1.

Our requirement is for an experienced Systems Analyst to play a major role in the development of new and revised on-line application. This is a position of responsibility within the data processing department.

The successful applicant will have had a significant involvement in the investigation, design and successful implementation of at least one major project. Experience in a manufacturing industry would be advantageous.

Salary will be commensurate with the experience offered and assistance will be given with relocation expenses to the Norwich area if necessary.

Applicants should send career details including current and expectant salary to: Data Processing Manager, Nacanco Ltd, Salhouse Rd, Norwich NR7 9AT.

Nacanco Limited

(8674)

SENIOR PROGRAMMER ANALYST TECHNICAL SUPPORT

CIRCA £12,000 p.a.

The OASIS group who develop and support Data Processing Systems for International Banking offices require a Senior Programmer Analyst to join their Applications Programming Technical Support Team.

The OASIS Group (Overseas Automation Support for International Systems) operates from attractive air-conditioned offices beside the Thames using IBM 4300 hardware in a VM, DOS/VSE, VSAM environment utilising CICS and DL/1.

WE REQUIRE A SENIOR PROGRAMMER ANALYST WHO WILL HAVE:

★ A minimum of five years' programming experience (COBOL)
★ Design and implementation experience using the following:
  Command Level CICS
  Call DL/1
  Data Structured programming techniques
★ The candidate will have previous experience at a team leader level in the establishment of standards and procedures for programming.

WE OFFER THE SUCCESSFUL CANDIDATE:

★ An attractive salary
★ Profit-sharing scheme
★ Structured career progression
★ 5% house loan
★ Low interest personal loans
★ Non-contributory pension schemes
★ Free staff restaurant

The successful applicant will be responsible for providing technical assistance to the programming teams, ensuring quality of program development, the adherence to standards and the development and evaluation of programming aids.

If you have the experience, are forward thinking and enjoy a challenge phone Ray French, on 01-600 5666 or apply to OASIS Manufacturers Hanover Trust Co, Queensbridge House, 60 Upper Thames Street, London EC4.

(8741)

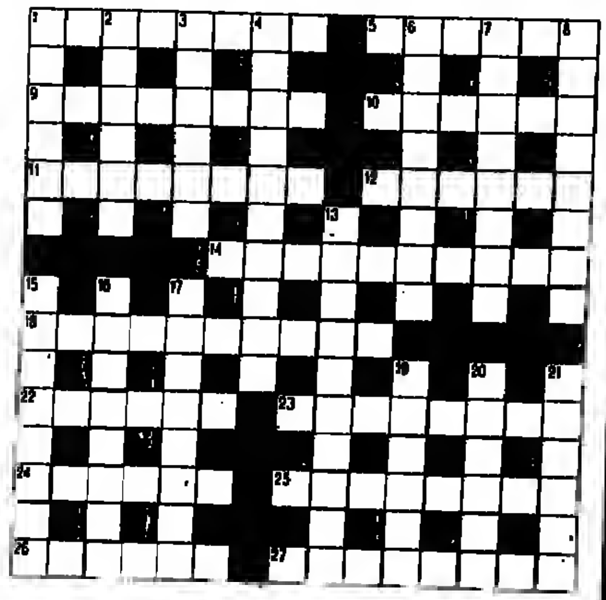
MANUFACTURERS HANOVER TRUST COMPANY

CROSSWORD

Prize Crossword No 26

Compiled by Alec Robins

A prize of £10 will be awarded for the first correct entry opened. The second and third solutions opened will receive £5 each. Entries to Crossword Competition, Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS, by first Post Friday, March 12. Please use a ballpoint to complete the crossword, and include a telephone number at which you can be reached during the daytime.



Name...(Miss, Mrs, Ms, Mr)

Address..

....

Telephone..

I accept the rules and conditions of the Computer Weekly Crossword Competition.

Signed.............................. Date..............................

ACROSS

1. Musical sounds appear to enfold revered figure in retreat (8)
5. Girl has to cut down very fast pace (6)
9. Leave mink? Look – how disgusting! (8)
10. Redhead shows mettle (6)
11. Rude bankrupt, without first sign of virtue (8)
12. What organiser of detective branch did? It's foul (6)
14. Happen to do best in exam, ahead of idiot (4,2,4)
18. A directors' joint on deck? (6,4)
22. Tasty stew made from chaff, abroad (6)
23. Greek article pocketed by one Scotsman? (8)
24. Repositories below ground level for wine (6)
25. Sort of hedge made by nimble group (8)
26. Volunteers pulled back in fair time, getting bidden (6)
27. A dealer to deal with when in credit (8)

DOWN

1. Soft cake made by miss at home (6)
2. Player of string instrument, awfully bristly, losing head (6)
3. Attractive young girl embraces king in a funny way (6)
4. Encourage a proposal of health with a snack (3,2,5)
6. A soldier thanks an eminence, one who stirs things up (8)
7. Record here in France, an expert at reasoning (8)
8. Blessed abode is exhibited in display (8)
13. Make contact, as a football may do when kicked out (3,2,5)
15. Crazy outfit gets a student to give a song (8)
16. Nag collapses in a critical moment – it's pathetic (8)
17. Foreign miss in funeral I embarrassed (8)
19. During Eastertide, a conscientious clergyman (6)
20. Gaudy metallic stuff lets in wind (6)
21. Joiner gets most of the train fixed up (6)

RULES AND CONDITIONS

1. Each competitor may submit no more than one entry.
2. The competition is open to all readers of Computer Weekly with the exception of the staff of IPC Business Press Ltd, any printers employed by them or the near relatives of any such staff.
3. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.
4. Winners will receive their prizes during the month following the competition.
5. The decision of the editor on the interpretation of the rules and conditions and on all matters shall be final. No correspondence will be entered into.

ANALYST/PROGRAMMERS
WOKING £7-9K NEG
HP 3000/III (Upgrade probable)
We require additional persons with HP experience to join our team implementing an Order Processing system using COBOL, IMAGE and VIEW.
Roger Choat
JAMES WALKER & CO. LTD
LION WORKS, MAYBURY HILL
WOKING, SURREY GU22 8AP
Telephone: Woking 5951
(8767)

THE HATFIELD POLYTECHNIC
SCHOOL OF ENGINEERING
LECTURER II/SENIOR LECTURER IN ELECTRONIC/INFORMATION ENGINEERING
(Re-advertisement)
Candidates should have an Honours Degree in an appropriate discipline and recent relevant industrial and/or research experience is desirable. Applications from those with experience in information engineering will be particularly welcomed. The successful candidate will be required to teach on degree, diploma and post-experience short courses and will be expected to develop research and consultancy activities.
Salary between £6,876 and £11,541.
Application forms and further details may be obtained from the Staffing Officer, The Hatfield Polytechnic, P.O. Box 109, Hatfield, Herts. AL10 9AB, or telephone Hatfield 68100 extension 308.
Please quote Ref: 482.
Closing date: 18 March, 1982.
(8731)

SMR
Sales & Marketing Recruiters Ltd
A Sales and Marketing Services Company
SALESMEN
Exchange your job for a career
Whilst you are helping companies to make the most of their future productivity, do you ever think about the productivity of your own future?
A job is simply a task performed for a reward. A career might best be described as a vehicle for enabling the individual to exploit his strengths, overcome his weaknesses and grow towards his maximum potential. Unfortunately, most sales people are in the former category.
If your job runs out of challenge, please remember that our consultants have more direct experience of computer sales and management than any other recruitment company, the skills to give individual career guidance, a reputation throughout the industry for professional competence and high ethical standards and an extensive portfolio of employment opportunities to suit most individual needs.
Sales and Marketing Recruiters – The Career Consultants!
Contact Alan Williams, Alasdair Scott or Peter Hubble. (8457)
LONDON & SOUTH
MIDLANDS & NORTH

SALES EXEC.
USA
British Consultancy needs experienced d.p. sales exec. to generate both contract and permanent placement opportunities in USA. Single status initially. Unlimited earnings and great career opportunity. Resumes please:
Logsys, 75 Little Britain
London EC1A 7EY
(8704)

OXFORD POLYTECHNIC
COMPUTER CENTRE
OPERATIONS ANALYST
Applications are invited for the post of Operations Analyst. The successful applicant will lead a team of operators responsible for the Centre's computers. Equipment installed includes three Prime processors running under PRIMOS and PRINET, supporting 109 terminals and a variety of micro computers.
Applicants should have a good educational background and will have an appropriate post 'A' level qualification, as well as experience of working in a medium to large computer installation.
A two-shift working system is in operation and the salary will be on the T3 scale, £5652-£6333 plus 14% shift allowance.
Further details and application forms from the Deputy Administrator, Oxford Polytechnic, Headington, Oxford OX3 0BP.
(8732)

OPERATOR
IBM 43/41 VM.CMS DOS/VSE Surrey, £7,000 plus shift.
HERON COMPUTER SERVICES, BRIGHTON 689552.
Also evenings and weekends.
(8742)

DIBOL
Analyst/Programmer required by Kingston-based Software house. Contract or permanent.
C.V. to I.C.C.S. 2 Fife Road Kingston, Surrey KT1 1SZ
Tel: 01-546 0099
(8743)

FOR CLASSIFIED ADVERTISING USE
DIRECT LINE
01-661 0121

Freelancers...
...in the North of England and Scotland who are available now or in the near future are invited to contact me, Peter Moore, to discuss a variety of interesting and rewarding assignments throughout the UK and overseas.
P-E Computer Services Limited
Winchester House, Fountain Street, Manchester M2 2EP. Telephone: 061-228 2775.
PE
(5813)

Software/Hardware Development Engineer
c.£10,500
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SALES BIT

Salesmen can fall for own propaganda

TOTAL enthusiasm for both product and company is absolutely essential if a salesman is to enjoy continuing success. However, this should not develop into a kind of chauvinistic tunnel-vision that focuses only on the glorious way his company leaves competitive products in an unseen heap of assumed inadequacy.

This kind of optimistic euphoria can be misleading to the potential buyer, but it can also deceive the salesman out there peddling the product, for salespeople are particularly susceptible to their own propaganda.

It would be nice to have a commodity for which there was real need yet no competition; but this is seldom the case. If there are other products available for broadly the same purpose, there is competition and to assume that all competitive products are inferior is an arrogance that will ensure more failure than success.

While it is rather a sweeping statement, it is reasonable to say that there would be no such thing as competitive products if they did not have some appeal to certain buyers. This being the case, the salesmen can afford no other stance than to regard all competitive products as equal.

What does the buyer really want from the product he is considering for purchase? Here are a few possibilities that come to mind:

- Ability to solve a given problem or perform a particular task without overkill or underkill.
- Availability of a special feature to satisfy an unusual need.
- Positive resale potential with an attractive profit margin.
- Quick delivery.
- Low cost.
- Company or personal status.
- Political advantage.
- A bribe!

Only a fool would believe his product unquestionably superior to those of every other vendor in all of these few cases, let alone the vast number of other selling factors that might exist. So, it is an essential discipline of the selling process to have a complete awareness of one's own product, company and available features and benefits, and of the primary needs of the prospective buyer and the relative capabilities of competitive suppliers.

Only when he has completed this kind of comprehensive analysis can the salesman be in a position to get a realistic picture of the competition, based on facts rather than unmitigated optimism, fervent hope, rank naivety or just plain laziness!

There is a quick method for providing objective analysis of any sales situation which, despite its simplicity, appears to be a much neglected process. It is called the competitive evaluation matrix. The process consists of two stages.

First, a comparison between the principal needs of the potential buyer and the ability of competitive suppliers to wholly or partially satisfy them. This means you have to know who your competitors are, and have a comprehensive knowledge of their products in terms of hardware, systems software, applications software, price, delivery, etc.

Second, a comparison between the features and benefits of one's own product and those likely or known to be proposed by competitors.

These two exercises are similar, but not the same. In the first case, it is an analysis of need and the relative ability of suppliers to satisfy it. The second is an analysis of the means by which these suppliers go about providing the solution to the problem.

In the case of competition involving a minicomputer based business system, the prospective buyer's axis of the matrix may include requirements such as:

- Packaged programs for all commercial accounting, payroll and stock control applications.
- Packages for forecasting and financial planning.
- Electronic mailing capability.
- Up to 30 online interactive terminals.
- Maximum of one-second response time.
- Six remote interactive terminals via switched network.
- Up to two Mbytes addressable online storage.
- Maximum of four months delivery.

Along the opposing axis are the names of the suppliers, and within each element of the matrix the capability of competitive suppliers is declared. Some will indicate a complete ability to satisfy the individual need, some partial, some a complete inability to provide what is required.

In this way the salesman has a more objective view of his competition, while still mindful of the reality that the best product doesn't necessarily win the order.

In the second phase, one side of the matrix consists of the salesmen's product and the principal competition, and the other contains the product features that are likely to be proposed and their relative performance one against the other, perhaps even using a scoring system and certainly noting specific factors of particular strength and weakness.

i Yes, the XYZ Computer Co can propose a financial planning system, but it will be bought-in and they have never previously installed one.

ii Yes, the ABC Computer Co can handle 30 online interactive terminals, but cannot guarantee a maximum of one-second response when all are operating simultaneously.

Once the second phase is completed, the salesman has a clear picture, not only of the client's needs and the capability of competition, but, more importantly, the strengths and weaknesses of his sales argument so that he can present his case in the most effective manner.

Alan Williams

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